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THE HEADQUARTERS OF THE MINING INDUSTRY.

We have great pleasure in announcing the opening of headquarters and cordially extend to our friends from all parts of the world an invitation to make use of them. They will find here files of a great number of papers from the mining districts of this and other countries, and books of reference which can be consulted for information on any question in which they may be interested.

Visitors can have their letters addressed in care of "The Engineering and Mining Journal," P. O. Box 1833, New York, and will find in the headquarters every convenience for correspondence.

The interesting discussion which is being carried on concerning the effect of magnesia on sulphur in blast-furnace cinder has brought out many advocates on each side, some claiming that the high-lime cinder will remove sulphur more effectually than high magnesia, and others taking the opposite ground. Probably the difference in opinion comes from a difference in practice. It is a well-known fact among furnacemen who have been able to use a slightly dolomitic limestone, that to carry about 8 per cent. magnesia in a 34 or 36 silica slag gives better results so far as the removal of the sulphur is concerned than a cinder which does not contain magnesia. The practice in the South was for a long time confined to the use of non-magnesia limestones, but when some furnacemen became bolder and tried magnesia the results were so much better that it may be said to have gone into general use. For mill irons it is not likely that magnesia would give such satisfactory results, but for foundry irons it undoubtedly does, and it might further be added that when it is necessary to run on a highly basic cinder, if it contains about 8 per cent. magnesia it will not slack, whereas a lime cinder of the same basicity would slack while almost red hot. This is particularly noticeable when making spiegeleisen.

THE COLAR GOLDFIELD IN INDIA.

From time to time there has been some excitement in London over alleged gold discoveries in different parts of India, and a good deal of money has been expended in attempts at the development of new mines. So far, however, the only field of importance which has been practically worked in the British possessions is the Colar field, in which several companies have operated with success. The history of this field has shown a curious uniformity in the yearly output since it reached the productive point. While there have been many changes in the working of individual mines, the total yield has varied but little, and the field has come to be counted a steady producer. It may be of interest to give a comparison of the production of the five companies which divide among them most of the mines of the district, for two years past. The table gives the tonnage of ore worked and the ounces of gold produced:

	1893		1894	
	Tons.	Oz.	Tons.	Oz.
Ooregum	62,872	75,023	45,294	68,274
Champion Reef	22,075	31,416	44,644	53,516
Mysore	48,708	65,409	60,756	52,115
Nundydroog	25,760	31,223	29,730	29,745
Balaghat	5,640	7,252	4,265	5,322
Totals	165,005	210,453	184,689	208,922

It will be seen that the Mysore Company has fallen considerably in its output and the Ooregum and Nundydroog have also decreased slightly, while the Champion Reef, heretofore considered one of the smaller companies, has taken the second place, with an increase of nearly 70% in its output of gold. The Ooregum, however, still retains the first place. The total gold produced was somewhat smaller last year than in 1893, in spite of a considerable increase in the quantity of the ore crushed. The average value having fallen from 1·28 oz. per ton in 1893, to 1·13 oz. in 1894. The average result, however, may have been somewhat reduced by the fact that the tonnage treated includes some tailings from former years, the treatment of which is comparatively a new feature in this district.

As far as it is possible to make a comparison with the South African mines, which are worked under very different conditions, it may be stated that the average yield of these Colar mines is considerably higher than that obtained on the Witwatersrand; on the other hand, the exploitation of the mines is more difficult owing to the nature of the country rock, which is much harder to work, while the ore is a hard quartz and cannot be crushed with the same facility as the banket ores of the Transvaal. In labor the Indian mines have the advantage of an abundant and very cheap supply, and there are none of the difficulties, which have often been encountered in South Africa, in controlling the native labor. In fuel and means of transportation also, the Indian mines are much better supplied, while their gold is somewhat finer.

The Wynaad District in India, which promised so well after its first discovery, has been practically abandoned. The quartz outcroppings first discovered were rich, but such explorations as were carried on convinced the prospectors that there was no evidence of permanent value sufficient

to warrant the expenditure of capital in sinking shafts or putting up machinery. It is said that the Indian Government intends to make a systematic examination of this and other districts, but the Indian Geological Survey has not yet been able to undertake the work.

THE PHYSICS OF CAST IRON.

The proposed scheme for the study of the phosphorus of cast iron, an abstract of which is presented on another page, and which was read by William R. Webster at the Florida meeting of the American Institute of Mining Engineers, now in session, is an important movement in the right direction. For ten years past there have been sporadic efforts to bring this matter to general attention. Professor Turner and R. A. Hadfield in England and W. J. Keep in this country were the leaders in this movement, and their many excellent contributions have furnished a large amount of data, much of which has been practically applied by foundrymen. Unfortunately, so far there has not been sufficient attention paid to the close relation which must exist between the chemical composition and the physical characteristics. Professor Turner's experiments were not sufficiently thorough nor extensive. Mr. Hadfield's work had special relation to the effect of the elements in the manufacture of steel, and Professor Keep has been hampered in his work by the lack of sufficient analyeis to give his physical tests the value which they otherwise would have had. The various foundrymen's associations which have been formed within the past couple of years have taken the subject up in an enthusiastic manner, but they too have been prevented from forming any definite or practical conclusions by the incompleteness of the tests which they have taken under discussion. In order to carry out a work of the kind proposed by Mr. Webster (and it is one of far-reaching importance), it would be necessary to formulate a scheme for analyses and physical tests. That which is suggested by him is not sufficiently exhaustive, the melting point, fluidity, shrinkage, fracture, chill and microstructure do not fully cover the ground. Mr. Keep's tests are broader than this, but to them should be added tensil, tortional and transverse strength, strength under repeated shock, and the various other physical peculiarities which are met with in complete chemical analyses. After these two divisions of investigation have been exhausted then it would be time to take up the plan Mr. Webster proposes.

There is much to recommend the procedure adopted by Mr. Keep in his early experiments; that is, taking as nearly a pure iron as he could get, and making to it successive additions of the elements whose effect he wished to study. The mistake which he made, however, was that each succeeding test was affected to a certain degree by the preceding test, since the material was either remelted or additions made to the melted metal. This should not have been the case; the only proper way would be to prepare a series of tests, each one separate and distinct, and each carried out under identically the same conditions. For instance, in the study of the effect of phosphorus on iron, starting with the practically pure iron, free from phosphorus, there should have been as many samples for testing as there were tests to be made. Each of these before being melted should have been properly mixed with the proportion of phosphorus desired, and each test carried out under the same conditions. It might be noted here that a metal was prepared for Mr. Keep's experiment which contained over 13 per cent. of phosphorus, and was practically free from other elements; this was used in making the additions of phosphorus to iron. After tests of the effect of each of the elements separately on pure iron have been completed there should be tests of the effect of two elements in varying proportions, then of three, and so on. It will readily be seen that in order to make an exhaustive examination of the effect of the elements on cast iron there would be a very large number of tests required.

Another matter in this connection which would be quite interesting and undoubtedly prove of value would be to find whether or not the various elements existing in iron in more than one form, as, for instance, silicon, whether it is there as such alloyed with the iron, whether it is oxidized to silica, or whether it is present as a silicide, or possibly as a silicate. Several years ago experiments were made taking pig iron and melting in a plumbago crucible, casting it into small bars. Analyses were made of the pig iron and the first bars. These were then remelted, cast and analyzed, and the same operation repeated several times. It was found in this experiment that the silicon, as estimated by Drown's method, decreased steadily, but the same sample, as estimated by combustion in a current of chlorine, decreased very much more rapidly, leading to the belief that in the remelting a silicate was formed, the silicon of which was not acted upon by chlorine, but appeared in the residue by Drown's method.

The study of the effect of the elements upon steel with particular reference to steel rails has been very exhaustive, and, if our chemists and others interested in the iron business would take in hand the same work with reference to cast iron, they would unquestionably effect as great an advance in the knowledge of the proper uses of the metal as has been done in the case of steel.

NEW PUBLICATIONS.

BENNER'S PROPHECIES OF FUTURE UPS AND DOWNS IN PRICES. By Samuel Benner, Cincinnati; The Robert Clarke Co. Pages 215. Price $1.

Mr. Benner's peculiar views and prophecies are too well known to need mention. Upon a slim foundation of only partial facts he erects a great and unwieldy framework of so-called causes, and based upon this he predicts the future. His arguments, while very elaborate, are altogether without convincing power.

DER STEINKOHLENBERGBAU IN DEN VEREINGTEN STAATEN VON NORD-AMERIKA. By R. Broja, Leipzig; Arthur Felix, New York, B. Westmann. Pages 112, and illustrated Atlas.

Mr. Broja, who not long ago made a careful examination of the methods of mining and preparing coal as followed in the Pennsylvania anthracite and bituminous fields, and also in West Virginia and Indiana, has presented in this book the results of his trip, describing minutely the mining appliances used in each district. The greatest part of the work is devoted to the Pennsylvania anthracite mines, and in the accompanying atlas he gives drawings of the breakers and various types of machinery employed, both in mining operations and in preparing the fuel for market.

The work is simply in the nature of a report, and while undoubtedly of great interest to those unfamiliar with American mining appliances, does not show or suggest anything new.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review on another page of the Journal.

Etude Complete sur les Phosphates. Par A. Deckers. Liege, Belgium: H. Poncelet. Pages 495; illustrated with Atlas.

Einfuhrung in das Studium der Qualitativen Chemischen Analyse. Von Carl Friedheim. Berlin, S. W., Germany; Carl Habel. Pages 347.

Steel Works Analysis. By J. O. Arnold. London, Eng.: Whittaker & Co.; New York: Macmillan & Co. Pages 350; illustrated. Price $3.

Steam Power and Mill Work. By George William Sutcliffe. London, Eng.: Whittaker & Co.; New York: Macmillan & Co. Pages 886; illustrated. Price $4.50.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
Letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Uehling & Steinbart Pneumatic Pyrometer.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I observe that you head the notice of the Uehling & Steinbart Pneumatic Pyrometer with the heading Uehling's Pneumatic Pyrometer, for which inadvertance I am very sorry, as it does injustice to Mr. Steinbart, to whose experimental skill and patient labors the perfection of the instrument is principally due. All patents for the pyrometer are granted to E. A. Uehling and Alfred Steinbart and his name should have appeared in the title of your notice,

BIRMINGHAM, Ala., March 21st, 1895. ED. A. UEHLING.

Economy in Air Compression.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: My article on the relative efficiency of air compressors, published in your journal on February 2d, mistakenly headed "The Use of Compressed Air," invited what we Americans admire—fair play; but the explosion of some pet theories treated upon, comparatively, seems to have created a counter wind of another sort.

The recent criticism of the article would receive no attention from me, nor from any one else perhaps, except for the very misleading statements and apparent authoritative assertions of fact, which are so only in the mind of the critic. The very irrelevant citations intended to carrom me from my position, do not controvert the fact that atmosphere admitted to a compressing cylinder through intricate, restricted and heated passages, cannot be juggled into a condition of greater weight than just common every-day atmosphere at rest; nor can repeated manipulation of the same air lessen the cost of its compression.

Now, most of us have somehow acquired the impression that a given volume of heated air is of less weight than a like volume of cool air. We know very well that when the air of our offices becomes overheated, we suffer from its excessive pressure and heat as well, yet if we open the window we can feel the cool air come in, even against the excessive pressure of the room: if there is a "rammer" in the case, my critic might sue for infringement; as he seems to be the originator of that idea, an inexpensive rammer for giving heated air more weight than cool air. But possibly his indicator has misled him, or it may be that he assumes pressure as weight; most indicators do not register weight, but pressure only.

In my graphic illustration of the comparative economy of different modifications of air compression, the endeavor was to treat of the subject itself, and in a practical manner. I did not deem it advisable to make a comparative deduction from the potential of the original sun rays, to force now available; nor did I offer a treatise on steam engine economy; neither did I treat of car brakes. My critic expatiates upon those things to back his assertion that I have "strained out gnats and swallowed camels."

Disregarding personalities and insinuations, the incentive for which I recognize very well, I must still maintain that the real difference in economical air compression is to be found between adiabatic and isothermal compression of the same weight of atmosphere. The compressing cylinder which begins with the coolest air and ends with the least heated air is the most economical, as I fully demonstrated in the article published February 2d.

My captious critic labors with figures and speech in the endeavor to show that there is some 900% difference in cost of air compression; in another place he makes 200 the difference in percentage, and then when

he thinks his purpose accomplished, maintains that there is really but 10% difference in relative efficiency.

Steam engine economy is irrelevant in a comparative sense, because each builder is free to employ motors of any degree of economy, suiting the wishes of the purchaser. Such motors are quite generally understood, the chance for deception is in the part the least understood, the air cylinder. Those interested may find a full description of the compressor that was in my "mind's eye" elsewhere, together with some other matter of interest.

CHAS. A. BENNETT.

126 LIBERTY STREET, NEW YORK, March 28th, 1895.

Cyanogen Bromide and Potassium Cyanide for Dissolving Gold.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I thank you for the notice given in your issue of February 23d of the haloid cyanogen series of solvents which have lately been worked out by Dr. Teed and myself, especially as regards cyanogen bromide.

Permit me to add a few remarks in amplification and correction of one or two points.

All three haloid combinations, viz., the cyanogen chloride, bromide, and iodide, have been experimented upon by us and are included in our specification. The chloride, however, is gaseous at ordinary temperatures, while the high price of iodine precludes the commercial use of the iodide. For these reasons we have devoted most attention to the bromide.

The solution of potassium cyanide in the comparative tests was not five but 0·5%.

Bromide of cyanogen is, it is true, pungent, but its volatility is not remarkably great, being comparable to that of camphor; the substance is capable of easy handling and export.

Upon gold leaf, with solutions of cyanide of potassium varying from ·1 to ·5%, the addition of cyanogen bromide in the proportion required by the equation—$CyBr + 3KCy + Au_2 = 2(KAuCy_2) + KBr$, renders the solution of the gold from 300 to 600 times more rapid than in the case of the cyanide alone.

This extreme rapidity is modified, of course, by the different conditions which obtain where gold is held in an ore, or in concentrates and tailings; but even here the gain in rapidity of action over ordinary cyanide is very great. It is seldom, even in the case of pyrites concentrates, that we have found more than 24 hours necessary for complete extraction of the gold therefrom, whereas in the Randt treatment of pyritic concentrates the time for leaching treatment runs into weeks.

Half a ton of an Australian concentrate, consisting mainly of iron pyrites, but containing some copper and antimony, assaying 3 oz. 15 dwt. of gold per ton, yielded 3 oz. 12 dwt. of gold in nine hours with ·3% solvent. It is largely owing to this increased celerity of extraction, and secondarily to the non-production of caustic potash as a necessary solvent reaction product, that we have been able to apply a solution containing potassic cyanide to gold ores which have hitherto proved refractory to that agent, owing to the destruction of cyanogen thereby effected.

That caustic potash is formed in the ordinary process of cyaniding is seen from the equation:

$$4KCy + Au_2 + H_2O + O = 2(KAuCy_2) + 2KHO,$$

and prolonged contact of caustic potash with many mineral sulphurets gives rise to alkaline sulphides and other cyanogen-destroying compounds, thus explaining the non-success of the ordinary process. With the haloid cyanogen solvent only the haloid salt of potassium is formed as a reaction by-product, and this being inert with regard to mineral sulphides the former source of cyanogen loss is avoided.

My process for the manufacture of bromide of cyanogen would hardly be described as a secret one; I prepare the substance from potassic cyanide or other suitable cyanogen base by the action of bromine thereupon, and have overcome the initial difficulties experienced—especially with regard to the formation of paracyanogen—in rendering the process a commercial one. The other methods of preparation mentioned by you, sir, are only of laboratory application.

We have tried ourselves upon masses of ore, tailings, and concentrates of all kinds, most of them having been heavily pyritic and often containing considerable amounts of copper, arsenic and antimony. In every case we have obtained extractions on the unroasted substances approaching commercial completeness—the average of the tailings obtained with concentrates of ordinary richness being about 1 to 1½ dwts. In fact, it has appeared to Dr. Teed and myself that our solvent has given us a cheap and efficient substitute for the ordinary roasting and chlorinating processes for rich pyritic and other refractory ores.

The price mentioned by you, sir, for the bromide of cyanogen has been found capable of further considerable reduction and we hope shortly to be able to supply it as a commercial article to those who may wish to use our process.

H. LIVINGSTONE SULMAN.

LONDON, E. C., March 13, 1895.

Coal Consumption in the Desilverization of Lead.

EDITOR ENGINEERING AND MINING JOURNAL:

Sir: I read with much interest the letter of my old friend, Mr. W. Maynard Hutchings, published in your issue of February 23d.

Should you not consider my reply as coming to hand too late, I venture to trespass upon your available space by offering a few remarks in answer to his statements.

To begin with, I am quite in agreement with Mr. Hutchings as regards Hofman's figure of 2·07% coal used in desilverizing; it is most surprisingly low, and I also wait with considerable interest a confirmation or denial of the statement.

Concerning Mr. Hutchings' assertion that at some of the best works on the continent of Europe the quantity of coal used runs as high as 10 or 12%, I cannot for our reputation as continental smelters allow this statement to pass without remark.

At the Pertusola works, where the desilverizing plant, up till the end of last year, consisted of 40-ton pots, the average consumption of coal for the past three years has been 6.6% per ton of market lead produced, and covers all those operations mentioned by Mr. Hutchings, namely, firing pots, liquating and dezincing the desilverized lead. In considering this result it must be noted that at Pertusola the rich lead attains to a tenure of 20% silver, averaging during the year some 14%, which, by itself, requires an important extra percentage of fuel.

At the beginning of this present year I have erected somewhat larger pots (43 tons), and, what with smaller improvements, have succeeded in considerably reducing the above figure.

With two such pots worked during the 24 hours, giving an average production of 80 tons of market lead and a coal consumption of 4 tons, the percentage of fuel per ton is reduced to just 5%. I would add that Newcastle coal of fair quality is used throughout the works. Mr. Hutchings remarks about the necessity of adapting processes to the special requirements of the country, with particular localities where the work is to be done, are very true, and shows an accurate appreciation of one of the first steps necessary to metallurgical success, and this same principle applies with equal force to different kinds of lead smelting and desilverizing establishments among themselves.

In the ordinary lead works both in Europe and America the desilverizing plant is merely a part of the whole, and cannot be considered or worked according, only to its own requirements. All parts of the smelting works must work smoothly together, receive and pass on the different products as fast as they are turned out, so that nowhere should there be a stoppage of work or accumulation of production.

With this object in view, the American custom of softening silver-leads rapidly at high temperatures seems to me not only advisable but absolutely necessary. Also, I have never observed any of the difficulties mentioned by Mr. Hutchings regarding imperfect or unsatisfactory softening.

At Pertusola, where the present desilverizing plant was put up in 1891, the softening furnaces were arranged according to the American plan, only a collecting pot was placed between them and the desilverizing pots. These furnaces hold about 50 tons of lead, the charges are melted down quickly and fired very hard, so that the softening may be rapidly accomplished.

As regards the elimination of copper, I have never experienced any difficulty. Undoubtedly, to run straight from softening furnace into the desilverizing pot would be an error, but by the use of the collecting pot, and allowing the lead to cool therein, copper may be very thoroughly removed.

On looking over my old analyses of this part of our work, I find the following to be about the average results obtained: Lead to softening furnace, 0·455% copper; copper drops from furnace, 7·520% copper; copper drops collecting pot, 2·390% copper; soft lead into desilverizing pot, 0·080% copper, which is certainly not a lead with too high a percentage of copper to send to the desilverizing pots.

Mr. Hutchings advocates, instead of this rapid softening at high temperatures, the alternative process of low temperature, large charges and slow work. I have no doubt but that this is an equally effective process, but to an ordinary lead smelting establishment with a production of, say 70 or 80 tons a day, it is not applicable.

A furnace of 140 tons' capacity would require two or more days for filling up, with a consequent heaping up of silver lead, which ought to be the smelter's object to avoid, his work being to pass on the lead quickly to the next operation.

In desilverizing works, pure and simple, such 140-ton furnaces must, I am sure, prove themselves very economical, provided always you are working on such a large scale as I know Mr. Hutchings does; but to most smelters is not given the luxury of handling such large quantities of lead at one time.

A last word as regards wear and tear, with consequent repairs, of softening furnaces worked at high temperatures.

The Pertusola zincage battery is supplied with one 50-ton dezincing furnace, which softens two charges of desilverized lead during the 24 hours, and last year this furnace worked through the whole 12 months, from January 18th till December 28th, without a day's stoppage, the only repairs during this time being such as could be done between one charge and another, and consisting merely in now and then ramming in ordinary clay (better than fireclay) whenever a corrosion of any importance showed itself.

THOS. HUNTINGTON.

PERTUSOLA, Italy, March 11, 1895.

UNITED COLLIERIES OF THE WEST OF MONS, BOUSSU, BELGIUM.

The Societe Anonyme des Charbonnages Unis de l'Ouest de Mons was formed in 1868 by the union of the collieries of Boussu-Sainte-Croix-Sainte-Claire, Belle Vue-Baisieux, Dour et Thulin, Grand Hainin et Longterne-Tricheres; and in 1882 the company took over the concession of the Houilles Grasses, or bituminous seams, of the Levant d'Elouges, and in 1885 that of Longterne-Ferrand. The present concession, extending over an area of 5,446 hectares (13,478 acres), with a mean width from north to south of nearly 7 kiloms. (4⅛ miles), comprises all the seams in the Couchant de Mons Basin. The total number of hands employed is about 3,600, including 2,660 underground and 940 on the surface; and the employees, numbering 40, include 9 engineers.

The Belgium coal deposit, which fills a wide and deep valley formed by a depression of the carboniferous limestone, has two slopes called Comble Nord and Comble Sud; and the thalweg of this valley bears the name of "Naye," its depth under Boussu probably exceeding 2,300 miles (1,258 fathoms).

The Ouest de Mons concession extends over the whole of the southern slope and a portion of the northern. No working has yet been attempted in the latter; but it is well known from the workings of neighboring collieries that the seams of the upper group are much disturbed. The Comble Sud is formed of large seams slightly dipping toward the north, but which do not continue to the outcrops on the south. The seams, sharply upthrown and folded back upon themselves, form a succession of vertical and of inverted horizontal seams, as if they had undergone lateral compression. Subsequently, other compression movements from the south to the north exerted their effect and gave rise to the Faille du Midi, dipping to the south, which cuts off the coal measures. Older rocks than the coal measures have moved forward, without being inverted, while sliding over this fault, as on an inclined plane, and overlie it in non-concordant stratification.

The output of the Ouest de Mons Collieries has considerably increased during the last few years, and fresh discoveries warrant the expectation

of still further increasing it to a considerable amount. The Belle Vue section, especially, is now undergoing transformation and preparation, and it will probably in the very near future contribute a larger proportion to the total output of the colliery.

In the year 1868, when the company was formed, the output was 330,501 tons, which, with fluctuations, rose in 1880 to 417,353 tons, and in 1885 to 505,848 tons. The largest output hitherto obtained was 571,900 tons in 1890, the figure for 1893, when most Belgian collieries showed a falling off, being 513,350 tons.

Winding is effected by the nine following shafts: Alliance, No. 4; Sentinelle, No. 5; Saint-Antoine, No. 9, and Vedette, No. 10, forming the Boussu section; and Belle Vue, Nos. 7, 8 and 12, Grande-Veine, No. 4, and Longterne-Ferrand, No. 1, composing the Belle-Vue section. All the winding engines are fitted with apparatus for shutting off steam before the cages reach the surface, acting on the reversing lever so as to slacken speed before coming to bank, and it also puts on the steam brake automatically if the cage should rise a certain given height above the stops, with the object of avoiding its being drawn up to the pulleys. Near the winding engines there are powerful steam winches permitting, in the event of breakdown to the winding engine, of going down the shaft by means of round or flat steel ropes, passing over pulleys either at the same level or above the main pulleys.

The cages are, as a rule, made of steel, being formed of frames stayed by three angle irons and connected by channel irons. The weight of four-decked cages, including six suspension chains, two of which are for safety, is 960 kilos (19 cwt.). Both cages and tubs are entirely constructed in the shops belonging to the company.

The tubs, which weigh about 225 kilos. (4½ cwt.) and contain 400 kilos. (8 cwt.) of coal, have their bodies of steel plate, while the frame consists of steel bars and angles. The fixed axles are of steel, and of square section, 45 mm. (1¾ in.) side. The cast-steel wheels of 28 cm. (11 in.) diameter, run loosely on their axles, and carry a lubricator formed by a cap attached by two bolts, tightness of the joint being secured by a leather washer. In order to reduce wear in the rubbing parts, a busclure or tapered ring of phosphor bronze is driven into the wheel boss against the axle journal, so that the expenses of maintenance and repairs are reduced to a minimum. The adoption of this method has reduced the cost for lubricating the tubs to one quarter of what it was formerly, while the traction effort is greatly reduced. The gauge of the tubs, and therefore of the rolley-ways, is 55 cm. (1 ft. 10 in.), and the ways are laid with steel flange rails weighing 9 kilos. per running metre (18 lb. per yard) run, the sleepers being also of steel.

The methods of working employed are those of most Belgian collieries; the coal is got, according to circumstances, by forward or rising stalls, being taken out of the upthrown seams by maintenages or reversed steps. It has lately been found possible to greatly reduce the quantity of explosives used for driving the rolley-ways. Explosives have already been suppressed for several years in the seams subjected to sudden outbursts: and in 1893 this measure was extended to seams of the second and even the first category—that is to say, fiery seams and those but little fiery. This result, which greatly increases the degree of safety, has been obtained progressively, but not without great difficulty, and the increase of expense has not been at all considerable. The rock-drills preferred are the Elliot and the Thomas, for drilling holes of 60 mm. (2⅜ in.) diameter, into which wedge-needles (aiguilles coins), varying in length from 45 to 90 cm. mean (2 ft.), are driven with the sledge-hammer; and the best results obtained in the hardest rocks have been by means of shorter wedge-needles.

The following table gives the consumption of explosives in the underground workings during the last 23 years, and also the cost per 100 tons extracted. It will be noticed that, from the year 1889, when the so-called safety explosives made their appearance, the expenses increased without, however, any increase ensuing in the quantities employed. It is from the second half of 1893 that the progressive suppression of explosives began, so as to arrive during the present year at a very much reduced consumption.

	Output in tons.	Cost of explosives per 100 tons raised (fr.)		Output in tons.	Cost of explosives per 100 tons raised (fr.)
1872	371,118	2·82	1884	465,366	2·73
1873	339,126	3·24	1885	505,848	2·31
1874	329,631	4·40	1886	495,795	2·07
1875	336,236	3·70	1887	549,188	1·55
1876	318,202	2·97	1888	563,901	1·71
1877	319,616	3·11	1889	564,568	2·84
1878	354,753	2·15	1890	571,900	3·50
1879	329,857	2·65	1891	561,450	4·05
1880	417,353	2·31	1892	533,600	2·71
1881	421,386	1·81	1893	513,350	1·23
1882	453,619	1·91	1894	522,900	0·66
1883	447,306	2·53			

The quantities for last year are estimated from the consumption of the first six months.

SIXTY-EIGHTH MEETING OF THE AMERICAN INSTITUTE OF MINING ENGINEERS, FLORIDA.

The sixty-eighth meeting of the American Institute of Mining Engineers which was adjourned from New York and is now in session in Florida is in point of numbers fairly attended.

On March 27th the party met in Ocala, Fla., making a short excursion to the hard-rock phosphate region during the day, and in the evening holding a reception and business session. On Thursday further excursions were made to points in the hard-rock phosphate district, and a business session was held in the evening. On Friday morning the party left Ocala for Tampa, and in the evening a business session was held. The plans for Saturday include an excursion to some of the land phosphate mines and a session in the evening. On Monday it is expected that a trip will be made to Kissimmee, where the lands reclaimed by Mr. Disston's company will be examined. Following this, there will be excursions in the neighborhood of Lake Worth: on Indian River; to the celebrated Ormond Beach and to St. Augustine, finishing on Saturday, April 6th, with a trip to Anastasia Island. Following this the party will leave for the North, some of them stopping at Atlanta, where the Exposition grounds will be examined.

A number of interesting papers have been presented to the meeting and also discussions on papers read at previous meetings. The following are abstracts of the new papers presented at the Florida meeting:

THE NOMENCLATURE OF ZINC-ORES.

BY WALTER RENTON INGALLS.

The ores of zinc which are important as sources of the metal are of two classes, the sulphides and the oxides. The latter includes six varieties: Zincite (the red oxide) and franklinite (the oxide of zinc, iron and manganese), which are found abundantly only in New Jersey; the hydrous and anhydrous carbonates and silicates which are of widespread occurrence. Hydrous carbonate is known mineralogically as hydro-zincite, zinconize or zinc-bloom; the anhydrous silicate is recognized as willemite. In regard to the anhydrous carbonate and hydrous silicate there is a confusion of name which is of long standing. Attempts to clear it away were made long ago, with the result that there is now a more or less national uniformity of nomenclature; but there is still an international disagreement, sometimes very perplexing.

The name calamine, together with "Galmei" of the Germans, is a derivative of the Greek word used to designate the peculiar kind of ore employed with copper in brass making. Whatever the derivation of the word, however, it was used until within 100 years to include all the oxidized ores and compounds of zinc, both natural and artificial. In naming these minerals Dana says that, in 1807, Brongniart called the silicate Calamine, while the carbonate in 1832 was named Smithsonite by Beudant. In 1852, Brooke and Miller reversed these names and led to the confusion which now exists. In 1853, Kenngott introduced for the silicate the name Hemimorphite. At present the American usage follows Dana, calling the anhydrous carbonate Smithsonite, and the hydrous silicate Calamine. English mineralogists, on the contrary, call the anhydrous carbonate Calamine, and the hydrous silicate electric calamine.

The application of the name smithsonite to the hydrous silicate by Brooke and Miller had a certain following in their time, but no longer obtains. On the continent of Europe, however, the equivalent names, "calamine" and "galmei," are used in common parlance, especially in the zinc industry, to include the four mineral varieties, carbonates and silicates, hydrous and anhydrous. In Germany, many mineralogists use the nomenclature adopted by Dana, but most writers on technical subjects employ "galmei" as a class-name only, designating the silicates as "Kieselgalmei," and the anhydrous carbonate as "edler Galmei," "Smithsonite," or "Zincspath" (zincspar). French writers avoid confusion by using the chemical terms "zinc carbonate" and "zinc silicate," although in France, as in Germany, "calamine" (galmei) is employed by mineralogists as a purely scientific name for a distinct species—the hydrous silicate. The general meaning that the word calamine has on the Continent is probably a survival of the custom of the time when no difference in the oxidized ores of zinc was recognized.

Without regard to the rightful claim to these names according to the rules of nomenclature that have been laid down by eminent mineralogists, it seems that when a mineralogical name is popularly adopted to express a meaning different from that ascribed to it in science, and from such popular usage it passes into the dictionaries of the language, its more restricted use in science should be discontinued. Otherwise, misapprehension is likely to result, to avoid which such clumsy explanatory clauses as "calamine, meaning anhydrous carbonate of zinc," or "asbestos, meaning fibrous hornblende," must be introduced. Therefore, such names should be left exclusively as the industrial or class-names which they have become, and new names should be adopted for the species.

In the case of zinc-ores there is no confusion as to the meaning of hydrozincite or of willemite. It may be affirmed also that the significance of Smithsonite is clearly understood, since it is now never used for anything but the anhydrous carbonate of zinc. The hydrous silicate, however, should have a new name. Perhaps it would be simplest to call it "hydrowillemite," which would be explicit, and would convey its meaning at first sight.

HYSTEROMORPHOUS AURIFEROUS DEPOSITS OF THE TERTIARY AND CRETACEOUS PERIODS IN NEW ZEALAND.

BY HENRY A. GORDON.

Under the title "Hysteromorphous" the author includes deposits which have been formed from original deposits by the influences of the surface-region, the term having been used by Professor Posepny to distinguish secondary from primary deposits. The author says that in alluvial deposits it is claimed by many that at least a portion of the gold has been deposited by chemical agencies. No doubt solutions of gold exist in nature, and cases are given by numerous writers where such precipitation has occurred.

Referring to the Pliocene and Upper Miocene deposits of the west coast of the South Island, the youngest of these gravels are those of the Humphrey's Gulley range on the southern side of the Arahura Valley. At this place gold mining has been carried on in the gravels for a long series of years. Auriferous gravels, it may be of a slightly greater age, are worked in the Totara district, 3,000 ft. above the level of the sea, and on the Ross flat the same gravels are found containing gold 240 ft. below sea-level. The same beds have a very large development in the northwestern part of Westland, but owing to the small amount of gold yielded are not worked. They are also well developed along the east coast of the South Island, and in the interior district of Otago and Upper Clutha Valley beds of the same age cover considerable areas of the North Island, but are not known to be gold bearing. On the west coast of the South Island auriferous deposits of the lower cretaceo-tertiary are found, but are confined to the Nelson district.

Gold is also reported as found in the coarse granitic conglomerates at the base of the coal-measures in the Ten Mile Creek, north of Greymouth. It occurs also in the tableland west of Mount Arthur in the quartz drifts at the base of the cretaceo-tertiary formation.

In almost all the important diggings around the borders of the Maniototo basin the gold is obtained from quartz-gravel of old tertiary or cretaceo-tertiary date, or from a re-wash of such mixed with modern creek-gravel from the adjoining ranges.

In the Jurassic and pre-Jurassic deposits there are several bands of coarse conglomerates, some of which are reported as gold bearing, but

so far no locality has been discovered where gold is found in paying quantities.

CINNABAR IN TEXAS.

BY WILLIAM P. BLAKE.

The author says that early in 1894 Mr. George W. Manless, together with Mr. Charles Allen, explored the southern part of Texas within the Big Bend of the Rio Grande River, about 80 or 90 miles south of Alpine station, and 90 or 100 miles from Marfa station on the Southern Pacific Railway. The hills in this region are low and are much broken by escarpments of nearly horizontal strata of cretaceous limestone. The elevation is about 3,250 ft. The cinnabar occurs both in massive limestone and in a siliceous soale and a white earthy clay-like rock, and in part in a true breccia of grayish-white siliceous shale, dense and compact, imbedded and cemented in a red and chocolate colored ferruginous mass, also dense and hard. The genesis of the cinnabar is shown to be essentially like that of the iron oxide, but it is smaller in quantity and separated from the ferruginous bands in the rock, showing a great difference in the conditions of deposition. The cinnabar is more generally crystalline than amorphous. There are also considerable masses of snow-white argillaceous rock, seemingly the result of alteration of shale by infiltration, in which cinnabar is found in minute crystalline grains spread in bunches here and there through the mass. In addition there are amorphous bunches of cinnabar found in the brecciated shale and limestones and breccia. This cinnabar is, however, not in hard masses like those of the New Almaden mine in California, nor is it in veinlets, as there found, traversing the rocks; but is soft and friable and has a light vermilion color.

There is a second line of cropping of cinnabar a few rods north of the first in a mass of hard limestone. This is in a well-defined breccia of iron oxide, and the masses of cinnabar are closely associated with it. The cinnabar croppings may be traced a few feet each way, and the breadth does not exceed 18 in. or 2 ft. The existence of several outcrops of a ferruginous breccia, with and without cinnabar, is indicative of breaks in the beds in the nature of fissures accompanied by rupturing and crushing of the rocks by violent movements under pressure. The author states that the conditions for working these deposits are not favorable. The brilliant color of the ore would permit of its being used as vermilion; but there is no water near the place for concentrating it. Considerable ore could be taken out from the loose earth along the main croppings if water could be had to wash with. A supply of wood for fuel can be had along the Rio Grande, and could be delivered at the mines for probably $5 or $6 per cord.

NORTH CAROLINA MONAZITE.

BY H. B. C. NITZE.

Monazite is a phosphate of the rare earths, cerium, lanthanum and didymium. It also contains thoria and silica, which are present in varying percentages. The mineral is subtranslucent, light yellow, or yellowish-brown or green, and has a resinous lustre. Its hardness is from 5 to 5·5, and its specific gravity 4·9 to 5·3. Its economic value lies principally in thoria, which it contains; this is used as one of the constituents in the manufacture of mantles for the Welsbach and other incandescent gas-lights.

The mineral is somewhat widely distributed, but has been found in commercial quantities only in Brazil, Siberia, Norway, and North and South Carolina in this country. The North Carolina area embraces between 1,600 and 2,000 square miles, situated in Burke, McDowell, Rutherford, and Cleveland counties. The principal deposits of this region are found along the waters of Silver, South Muddy, and North Muddy creeks, and Henry and Jacob's Forks of the Catawba river in McDowell and Burke counties; and the Second Broad river in McDowell and Rutherford counties, and the First Broad river in Rutherford and Cleveland counties. Some monazite is also found in Polk county, and along the western edge of Catawba, Lincoln, and Gaston counties.

The best crystalized specimens have been found at Milholland's mill and Stony Point in Alexander County. The monozite occurs in the sands and gravels of the stream beds, associated with other minerals, such as quartz, feldspar, hornblende, epidote, mica, magnetite, garnet, zircon, rutile, corundum, etc. The primary source of monazite is in the crystalline gneisses and schists, of which it is an accessory constituent. The material produced from the disintegration of the decomposed country rock is deposited in the stream beds, and undergoes, by virtue of a continual current and differences of specific gravity, a natural process of partial sorting and concentration. The richer portions of the stream deposits are thus, as a rule, found near the head-waters.

As the percentage of thoria is variable in different sands, the value of the mineral consequently varies accordingly, and must be determined by careful chemical analysis. Some monazite contains practically no thoria. It is stated that the transparent greenish and yellowish brown varieties are usually the richest. The best North Carolina sands (highest in thoria) occur near Brindletown, Burke county, and in the northern part of Cleveland county. Some of the highest grade Brindletown sand runs from 4·00 to 6 60% of thoria; sand from Gum Branch in McDowell county is reported to run 3·30% thoria; some sand from near Shelley in Cleveland county contains 2·76% thoria.

The thickness of these stream-gravel deposits is from 1 to 2 ft., and the width of the mountain streams in which they occur is seldom over 12 ft. The sluice boxes used in separating it are about 8 ft. long by 20 in. wide by 20 in. deep. Two men usually work at a box, the one digging the gravel and shovelling it into the box; the other one working it up and down in the box with a gravel-fork or perforated shovel in order to float off the lighter sands.

These boxes are cleaned out at the end of the day's work, the cleaned monazite being collected and dried. If it contains magnetite it is treated with a magnet. It is then ready for packing and shipment. From 20 to 35 lbs. of cleaned monazite sand, per hand, is considered a good day's work. The value of the best grades of sand is 6 to 7c. per pound at the diggings.

During the past two years the following shipments of monazite sand have been made from this region:

In 1893: 110,000 lbs. at 6c. at mines, $6,600; 20,000 lbs. at 5c. at mines, $1,000; total, 130,000 lbs., $7,600. In 1894; 460,000 lbs. at 6¾c. at mines, $31,050; 80,000 lbs. at 6c. at mines, $4,800; 6,855 lbs. at 5c. at mines, $342.75; total, 546,855 lbs., $36,192.75.

THE TIN DEPOSITS OF DURANGO, MEXICO.

BY WALTER RENTON INGALLS.

References to the tin deposits of Mexico are scattered throughout technical literature, and that country has been looked to as a likely source of a part of the world's supply of tin. Thus far, however, but very small lots have come forward, so the notion has arisen that these mines are either mythical or unworkable. No published descriptions have heretofore been made of these deposits. This paper is based on the study of them made in 1892.

It is uncertain when tin was first discovered in Mexico, but it is likely that it was known and worked by the early Aztecs. The first exact reference to the existence of tin ore in Mexico is in one of Humboldt's essays, in which the author says that, in 1803, when he visited Mexico, tin was obtained from washing at Gigante, San Felipe, Robledal and San Miguel el Grande, in the province of Guanajuato, and between the towns of Xeres and Villa Nueva, in Zacatecas. Many travelers in Mexico who were keen observers failed to note the existence of tin, but Andres del Rio, the eminent Mexican mineralogist, writing in the early part of the century, mentions its existence.

Besides the localities mentioned by Humboldt, tin has been found in Mexico at the following points: Durango, Cacaria, and Potrillos, in the state of Durango; Canitas, Sain Alto, and Chalchiuites, in Zacatecas; Bolaños, Comanja, Teocaltiche, and Paso de Sotos, in Jalisco, and on the Ranchos de la Pena ans Jan Jose de Estanos, in the same state; at the Cerro de Zamorano, and in the Distritos de Chichimequillas and Bravo, in Queretaro; at the Cerro del Chiquihuite, in Aguas Calientes; in the Distritos de Ures, Arizpe, and Saguaripa, of Sonora; at Catorce, Valle San Francisco, and on the Mesas de la Cruz and San Jose Buena-Vista, in San Luis Potosi, also near the Santuario del Desierto, in the cordillera extending southeast from the capital of the state, San Luis Potosi; at Guanajuato, Dolores, Villalpando, Hidalgo San Diego, and between Santa Rosa and la Fragua, in the state of Guanajuato. This list is probably incomplete, and, being made up from the casual references of travelers and others, it is likely that many of the places mentioned are imperfectly described by name, and cannot be found on the map.

Potrillos, an outlying ranch of the Guartimape, on the Sierra de San Francisco, a spur of the Sierra Madre, about 100 miles north of Durango, is 12 miles southeast of the famous Promontorio mine, which in recent years has been a large silver producer. The general altitude of the valleys of Potrillos is about 6,500 to 7,000 ft. In 1839 there was a considerable population in this region getting tin-stone from the stream beds. The mineral was obtained mostly from placers, though the outcrop of some veins were also worked. The tin-bearing gravel and ore from the veins are washed in "bateas" and on "planillas," the latter being an incline plane set at the edge of the stream, upon which water was thrown on the ore, washing down the gangue and leaving the heavy tin-stone.

The black-tin produced was in part smelted and the other sent to Coneto for reduction. Its value was held to be from $1.50 to $2.50 per "arroba" (25·36 lbs.). The smelting furnaces were small shafts built of uncut stone and lined with clay. One of these furnaces was 5 ft. from top to hearth, 6 × 9 in. at the top, and 9 × 9 in. at the tuyere, which was 3½ ft. below the top.

The industry did not continue long, as the region was infested by Indians until 1867. After these were driven out a little mining was done, but the region was still very unsettled and no regular operations were followed.

The geology of the district is simple; the prevailing country is rhyolite and rhyolite-tuff, chiefly the latter, of recent origin. This is a grayish white, soft rock, very much decomposed even at a depth of 150 ft. In the Candelaria mine this changed suddenly to a hard, brittle, purplish variety. Cassiterite occurs along the fault-planes in aggregations of nuggets and occasionally in bands of crystaline mineral replacing the country rock between two sheeting planes. In the former class of ore there are all gradations from nests of pure mineral down to small particles, so the whole may not assay over 1% metal. The ore that has been mined, however, has generally shown from 3 to 10% of metal, and as thus found has been broken from breasts 3 or 4 ft. wide. The ore is found in pockets, never large, occurring in a series connected by thin stringers and having a general dip to the west of about 45°. These ore bodies are poorly defined, passing into the barren country rock by insensible gradations.

The cassiterite is generally in botryoidal concretions. In color it is oftenest black, but very frequently brilliant red and occasionally yellow. In the veins the tin ore is invariably associated with micaceous hematite. No evidence of wolfram compounds have been noted in the ore or metal. Analysis of two lots of pig tin showed, however, 7·3 and 9·2% antimony, with 92·6 and 90·6% tin respectively. It is believed that the antimony is chemically combined with the cassiterite.

After Potrillos, the next extensive developments in Mexican tin fields were carried out in the Cacária district, about 40 miles north of Durango. In 1881 the property was taken in hand by the Durango Tin Mining Company, of St. Louis, and extensively explored, but later was abandoned as unprofitable and the mines reverted to the original owners. These mines are in the southern extension of the Sierra de la Candela. The physical characteristics of the region are identical with those of Potrillos. The most extensive developments were made in the Diablo mine, which was opened to a depth of 273 ft.

The third locality in the vicinity of Durango is the Cerro de Inlesia de los Remedios, about half a mile west of the city of Durango. A shaft was sunk 60 ft., but the veins proved too small and the mine was abandoned. The country rock and vein formation are identical with that of Potrillos. There is very little information regarding the other tin deposits in Mexico. Attempts have been made to work those at Sain Alto, and certain others at Guanajuato, but with what success is not known. In the Canton of Teocaltiche, in the state of Jalisco, mines were exploited extensively at one time. The mine, "Los Vallecitos" was opened to a depth of 30 meters, and for a length of 200 meters on the vein. Its product when at its best was about 900 lbs. of black tin per month, from which 6,000 lbs. of metal were obtained. The mines at Bolanos, also in Jalisco, are still worked in a desultory manner to supply local requirements.

A WATER-COOLING APPARATUS.

BY CARL HENRICH.

The planning of smelting works, especially such as contain the large water-jacketed blast-furnaces of the present day, one thing is essential in

the construction is a sufficient supply of water. In some places where there is a scarcity of water, as in the West, a series of large shallow wooden tanks are employed, through which the water passes, and is pumped from the lower end back through the water-cooler at the furnace. Recently in planning and building the smelting plant of the Pittsburg & Tennessee Copper Company, at Ducktown, the author found it necessary to provide an arrangement of this kind. Although the region around Ducktown is well watered, the drainage of the old mine-openings empties into the creeks, and the waters are so impregnated with sulphates as to make them very undesirable for use in boilers or iron water-jackets. On the other hand, the springs furnish a water excellent for these uses. A group of springs immediately below the furnace site yields from 35 to 40 gals. of water per minute, falling to 25 gals. in abnormally long droughts.

Of the furnace for the water-jackets, of which this supply had to be sufficient, the horizontal area at the tuyere-level was 120 × 42 in.; the area at the top of the jackets (which was also the bottom of the charge-doors), 126 × 54 in.; the total height of the jackets, 12 ft. 5 in. Sixteen 4-in. tuyeres supplied the blast. Besides the jackets of this furnace, a small matte-concentrating cupola, 32 to 36 in. in diameter at the tuyeres, was to be supplied with water from the same source. The water for the boiler could be neglected, as this would be taken from the hot water coming from the furnace; and it would be a factor only in the determination of the size of the pump required for pumping the hot water as it came from the jackets to the cooling-apparatus.

The main problem was the cooling of 200 to 300 gals. per minute of water heated to about 180° to 200° F., down to a temperature as near that of the spring-water (about 40° F.) as possible.

In order to do this the author put in practice the plan used for many years at the salt works of Europe for concentrating the weak brine pumped from the salt mines. As constructed at Ducktown, the apparatus consists of a superficial framework, in which long, narrow, thin wooden strips were placed, set perfectly level, so that the hot water would spread out, and over the edge of which it would drop upon other strips below them, and a V-shaped floor to collect the cooled water and deliver it to two large tanks which formed a reservoir supplying cold water for the smelter. It is necessary in this to place the distributing strips perfectly level, and each one immediately below the opening betwen those above, so that the water is perfectly distributed. In practice it was found advisable to put up a wind-break at one side of the apparatus. The total cost of the arrangement was $321, and it was capable of efficiently cooling about 200 gals. per minute from almost the boiling point to a temperature low enough to permit its use again.

NICKEL AND NICKEL STEEL.

BY FRANCIS L. SPERRY.

Regarding the properties of nickel the author states that they are similar to those of iron and copper. It is less malleable and ductile than iron and less malleable and more ductile than copper. It alloys with these metals in all proportions. It melts at a temperature of about 2,900° to 3,200° Fahr. A small percentage of carbon in metallic nickel lowers its melting point perceptibly. Nickel is harder than either iron or copper; is magnetic, but will not take a temper. It has a grayish-white color, takes a fine polish, and may be rolled easily into thin plates or drawn into wire. It is unappreciably affected by atmospheric action, or by salt water. Commercial nickel is from 98 to 99% pure. The impurities are iron, copper, silica, sulphur, arsenic, carbon, and (in some nickel) a kernel of unreduced oxide. It is not difficult to cast, and acts like some iron in being cold-short. Cast bars are likely to be porous or spongy, but, after hammering or rolling, are compact and tough. A piece of pure nickel rolled-plate submitted to physical tests showed an ultimate strength per square inch of 69,390 lbs.; a reduction of 31·5% area, and an ultimate elongation of 31·4%. An untreated cast-bar of nickel showed an ultimate strength of 30,984 lbs. per sq. in.; 6·5% reduction of area and 6·5% ultimate elongation.

Nickel readily takes up carbon, and the porous nature of the metal is undoubtedly due to occluded gases. According to Doctor Wedding, nickel may take up as much as 9% of carbon, which may exist either as amorphous or as graphitic carbon, or in both conditions. The affinity which nickel shows for carbon is manifested in a striking manner in the Mond process of refining nickel.

Doctor Fleitmann, of Germany, first discovered that the use of a small quantity of pure magnesium would free nickel from occluded gases and give a metal capable of being drawn or rolled, perfectly free from blow-holes. Magnesium in nickel, like manganese in steel, acts as a purifying agent, and it improves the ductility and malleability of nickel to such an extent that the metal may be rolled into thin sheets 3 ft. in width. Aluminum or manganese may be used equally as well as a purifying agent; but either, if used in excess, serves to make the nickel very much harder.

Nickel will alloy with most of the useful metals, and generally adds the qualities of hardness, toughness and ductility. It is commonly alloyed with copper and zinc in making the composition known to the trade as German silver, white metal, British plate, Packfong or Chinese metal, argentan, electrum and maillechort, the hardness and whiteness of this alloy depending upon the percentage of nickel it contains. Nickel coins current in Germany, Belgium, Italy, the United States and Latin American countries contain 25% of nickel and 75% of copper. German silver has a considerable use in electrical fixtures and appliances, having a very high specific resistance.

The alloy known as "christofle" is composed of 50 parts nickel and 50 parts copper. As yet comparatively little use of this alloy is made in the United States; abroad it is largely employed in the manufacture of coachmakers' and saddlers' supplies as well as for surgical instruments.

One of the most important of the recent uses of nickel is its alloy with steel. Experiments with nickel-steel for armor have proven eminently successful, more particularly since the employment of the Harvey process for hardening the face of the plate. The United States Navy has had the two intermediate line shafts of the Iowa and the two propeller shafts of the Brooklyn made of nickel-steel. The former are 15¼ in. outside and 9¼ in. inside diameter, while the propeller shafts are 17 in. outside and 11 in. inside diameter. The specifications require a tensile strength of 85,000 lbs. and 50,000 lbs. elastic limit. The shafts are hollow forged. A complete set of nickel-steel forgings for an 8 in. gun has recently been made by the Bethlehem Iron Company for the Navy. Experiments have shown that great endurance is had from small arm barrels containing 4½% nickel. The excellence of the Greener gun is attributed to the use of nickel-steel barrels, containing 2·75 nickel.

Beside the application to which nickel-steel is being put in armor-plate, gun forgings and marine shafting, there is a still wider field open to its use for structural steel, heavy castings, car couplers, car wheels, boiler plates, small pinions and knuckles, shear knives, bicycle spokes, gears for motors, and all varieties of work demanding hardness, toughness and malleability.

Plates of iron, or steel, and nickel, when laid together and heated to welding temperature, may be rolled out into thin plates with a continuous nickel surface on both sides, or iron or steel on one side and nickel on the other. The union of the two metals is not merely a welding, but is of the nature of cementation, an actual alloy being formed to some depth below the surface of contact. There is a steam vessel in New York harbor sheathed in part, as an experiment, with this material, fastened with iron nails. After eight months' constant service the iron nails have corroded, and all of the bottom, except the nickel sheathing, is corroded and foul, while the latter is as clean as when first put on. If nickel nails were used, it would seem as if nickel sheathing, or sheet nickel, would make an ideal sheathing for all salt water craft. This material is also used for lagging steam cylinders, feed-water heaters, etc. It takes a fine polish, and is stronger than brass or copper.

THE WHITE PHOSPHATES OF TENNESSEE.

BY CHARLES WILLARD HAYES.

The author says that after the discovery of black phosphates in Hickman County, Tenn., white phosphates were discovered at Linden, in Perry County. Two varieties were found, distinct in appearance, mode of occurrence and origin. The first, the brecciated rock, and, second, the white-bedded rock. The white phosphate is most highly developed on Tom's Creek and on the west side of Buffalo River, north of Linden. It has been reported also from Spring and Lick Creeks, and from Rones' Creek. The rock occurs in large, irregular masses, composed of small angular fragments of carboniferous chert imbedded in a matrix of phosphate of lime. The chert fragments vary in diameter from a fraction of an inch to three or four inches. The phosphatic matrix when unstained by exposure to the weather is white or slightly reddish and rather soft. Analyses of the breccia-matrix show it to be a high-grade phosphate containing probably, when separated from the associated chert, 80·92% of lime phosphate. From the appearance of the deposits and their relations to the adjacent formations there can be little doubt that they are recent and superficial, the result of the leaching of the black phosphate and re-deposition near its outcrop.

The white-bedded phosphate, so far as known at present, is confined to a small area in Perry county, on Red Bank and Terrapin creeks. The phosphate is found about 70 ft. above the Devonian black shale, interbedded with the carboniferous chert. The phosphate rock is much harder than ordinary lime phosphate, and breaks with an extremely rough, irregular surface. It has a finely granular structure. Analyses show from 49 to 61% silica; 20 to 26% lime; 12 to 15% phosphoric acid (P_2O_5), corresponding to 27 to 33% lime phosphate, and 9 to 15% carbonate of lime. The author says that these analyses show that the contents of phosphate of lime are too low for utilization by present methods, though some process may be devised in the future. The rock is very abundant and easily mined.

NOTE ON A PROPOSED SCHEME FOR THE STUDY OF THE PHYSICS OF CAST-IRON.

BY WILLIAM R. WEBSTER.

In view of the great interest now taken in the tests of cast-iron and details of foundry practice, with the number of investigators at work, and recent improvements in the methods of research, it would seem that the time is ripe to attempt the solution of some of the many problems with which iron founders have to contend. Recent papers and discussions on these subjects have opened up a large field for investigation, and have emphasized the importance of many considerations generally overlooked. With the view of promoting a comprehensive and systematic discussion, I have attempted to tabulate, in convenient form, some of the most important points for investigation on the general plan suggested, with such good results, by our former President, H. M. Howe, for the discussion on the Physics of Steel, at the Virginia Beach meeting last year. This table can, no doubt, be modified or enlarged to advantage, and put in shape to serve as a guide or reminder to all who are interested in this line of work.

I.—Correspondence between chemical composition and melting point, fluidity, shrinkage, fracture, chill, micro-structure, and other physical properties.

II.—Influence of:

1. Cupola mixture, use of steel and other scrap, oxidized or clean material.
2. Manner of melting, flux, etc.
3. Casting temperature.
4. Manner of handling melted metal and method of casting.
5. Size and form of casting.
6. Kind of mould, green sand (under different conditions of ramming, amount of moisture, and skin-dried), dry sand, loam and chills.
7. Rate and mode of cooling castings.
8. Manner and temperature of heating for annealing.
9. Additions of nickel or aluminum.

on

A. Fracture.
B. Micro-structure.
C. Physical properties.
D. Shrinkage.
E. Chill.
F. Residual stress.
G. Condition and quantity of carbon and other elements.

III.—Segregation as affected by:

1. Composition.
2. Casting temperature.
3. Rate of cooling.
4. Size and shape of casting.

IV.—Blow-holes, their volume and position as affected by:

1. Composition.
2. Casting temperature.
3. Casting pressure.
4. Rate of cooling.
5. Size and shape of casting.
6. Special additions.

I am fully convinced that the relations between the chemical constitution and physical character of cast-iron are much closer than is generally admitted to-day. If proof of this is wanted, we have it in the success of those who have given up the old rule-of-thumb methods in running their foundries. There is no doubt that, in a full discussion and investigation of this kind, new data will be brought to light which, in connection with

the results of the valuable researches already made, would enable us to make tables and lay down rules for the founder's guidance that would be of the greatest value to the makers and users of cast-iron. In other words, from a cupola, or furnace mixture, of known chemical composition, we could predict with certainty the physical properties of castings of any given size or shape (due allowance being made for change of composition in melting). Or, when certain physical properties were required in a casting of given size and shape, the chemical composition of the different mixtures that would produce these results could at once be given without any of the "cutting and trying" that we now have. This is not too much to expect; and it is not too much to hope that each will do his part in bringing about a result so beneficial to all.

EXPERIMENTS FOR DETERMINING THE FUSIBILITY OF FIRE-CLAYS.

BY H. O. HOFMAN.

The author continues in this paper a description of the experiments on the fusibility of fire-clays which were presented at the Virginia Beach meeting of the American Institute of Mining Engineers, an abstract of which appeared in the "Engineering and Mining Journal" of April 21st, 1894. After describing the furnace, the crucible and mixture used, the author states that the material was slightly calcined and when cool moistened on a glass plate with water containing 5% of dextrine and worked with a spatula to a stiff paste. This was pressed into a mould, and the resultant pyramid was air dried over night and then slowly heated on an iron plate to drive off the rest of the moisture. Usually two dried samples are placed with three Seger cones in a crucible. The fuel best suited for the furnace is gas-carbon, as it is hard, dense and contains less than 0.1% of ash. It was crushed to pass a 2-mesh sieve and in order to ignite it about 200 grammes of charcoal were used. The first step in experimenting with the furnace was to find the amount of gas-carbon and the air pressure required for the different Seger cones. It took about six minutes to feed in the charge, fresh charcoal or gas-carbon being given when the glow penetrated the preceding charge of fuel. The pressure of the blast was slowly increased. Starting with just enough air to permit of introducing the ignited paper without its blazing up too violently, it was raised to one-half inch pressure when the first scoopful of charcoal had been given, and as the other fuel was added, gradually rose to two inches. When the pressure required for the starting experiment had been reached, it was maintained at that point until the end by increasing the amount of air in proportion as the carbon burned away. The author presented a very interesting set of tables and analyses, showing the composition and fusibility of various clays.

Papers were read also continuing the discussion on papers presented to the Institute at its Bridgeport and Virginia Beach meetings. Among them was a discussion by Philip Argall and Dr. R. W. Raymond on T. A. Rickards' paper on the origin of the "Gold Bearing Quartz of the Bendigo Reefs, Australia," read at the Bridgeport meeting; by Henry Louis, Professor Richards, W. B. Kunhardt and Walter Renton Ingalls, on Prof. Robert H. Richards' paper on "Close Sizing Before Jigging," read at the Virginia Beach meeting; by Joseph Le Conte on Professor Posepny's paper, "The Genesis of Ore Deposits"; by David T. Day, W. F. Durfee, William Kent, A. R. Ledoux, Charles Kirchhoff and Edward H. Williams on Mr. Glenn's paper, "An Explosion of Grahamite Dust," read at the Virginia Beach meeting; by E. E. Olcott, Dr. R. W. Raymond and Professor Kemp on Prof. J. F. Kemp's paper, "The Nickel Mine at Lancaster Gap, Pa., and the Pyrrhotite Deposit at Anthony's Nose on the Hudson," read at the Bridgeport meeting; by President Howe, Dr. Leonard Waldo, J. C. Platt and A. E. Hunt, on Dr. Waldo's paper, "Aluminum-Bronze," read at the Virginia Beach meeting. In continuing the discussion on Mr. Frank Firmstone's paper, "Magnesia and Sulphur in Blast Furnace Cinder," Mr. E. K. Landis calls attention to the oxygen ratio of the slags, in dolomite slag the ratio of basic to acid oxygen being 1:1·01 and in the limestone slag 1:1·17. The basicity of the slags is therefore in the ratio of 1·16:1, the dolomite slag being more basic than the other. Prof. H. O. Hofman and H. Van F. Furman discussed C. A. Stetefeldt's paper on the "Inaccuracy of the Commercial Assay for Silver."

Fertilizer Analysis for 1895.—A bulletin has been issued by the experiment station which gives in detail the standing of all fertilizer brands on sale in North Carolina in 1894, as determined by analyses of samples taken by official inspectors. This bulletin is issued in advance of the new analyses which are issued every two weeks during the season of 1895. The valuations of the unmixed ingredients at the seaboard have been fixed at 4½c. per pound for available phosphoric acid, 14c. per pound for ammonia, and 5c. per pound for potash. The phosphoric acid is rated one-half cent lower and ammonia 1c. per pound lower than for past seasons. The reprinted analyses of 1894 are calculated on the new basis of valuations.

Petroleum and Anthracite in Fossils.—Considerable interest has been aroused among geologists by the statement made in a German paper by J. J. Jahn that in his study of the silurian rocks of Bohemia he found in a dolomite of the Pridoli Valley that the hollow portions of certain fossils often contained a sort of nucleus of little lumps of anthracite or drops of petroleum—sometimes both substances—while the rest of the drusy hollow was taken up by calcite or dolomite crystals. The same occurrence, he remarks, is noticeable in the limestones near Stolba, and not only are the anthracite lumps and petroleum found in immediate connection with the fossils, but they occur, as well as mineral wax, disseminated in the midst of the rock itself—these substances, whether in intimate connection with marine shells or apart from them, being evidently the result of the decomposition of animal organism which, ages ago, were buried in the calcareous mud of the silurian sea. These observations by Jahn are said to confirm Professor Enger's opinion, who attributes the origin of petroleum to animal organic remains, and has succeeded in artificially producing that substance and its by-products from animal matter. It seems, too, that the conditions of temperature and pressure, which Enger found necessary in his experimental manufacture of petroleum, probably obtain in nature as a result of the crumpling and crushing of the earth's crust and of the eruptions of igneous rock which not seldom accompany these phenomena.

A DOUBLE-ACTING CORNISH PLUNGER PUMP.

A pump of this type, designed by William Nance and operated for some time at the Huntington Copper and Sulphur Company's mines near Magog, Canada, has some interesting features.

For some purposes the old Cornish pump was found rather cumbersome, so it was made double acting, reducing the weight of the main rod and doing away with the heavy balance bobs in the shaft. The rod is just heavy enough to force the column of water on the down stroke, and is constructed of wood and steel plates. In connection with the stuffing-box there is a contrivance for holding the gland constantly tight when working under water.

Fig. 1 is an enlarged sectional view of the self-tightening stuffing box, showing method of holding the gland tight when working under water, which is held down by means of weights (*WW*) suspended to wire ropes passing around pulleys and fastened to the gland. The ratchet motion (*CC*) is to prevent the gland rising on the up stroke through any temporary excess of friction caused by small fragments of packing jamming or otherwise. The piston rod on the down stroke helps to press the gland down and the ratchet keeps it down. *AA* is the packing, *BB* is a space filled with oil and confined within the packing, *D* is an oil can to supply oil automatically to the reservoir *B* as required. The gland acting on the

Fig. 1.

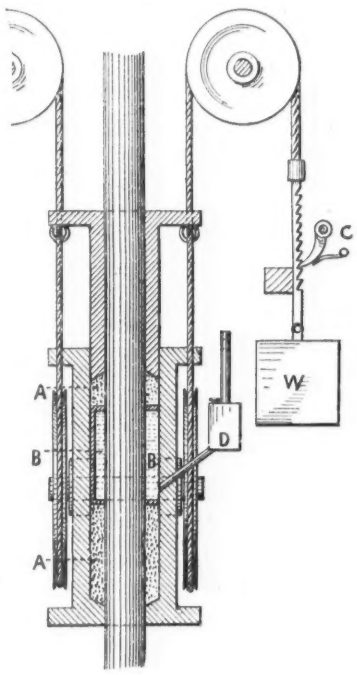
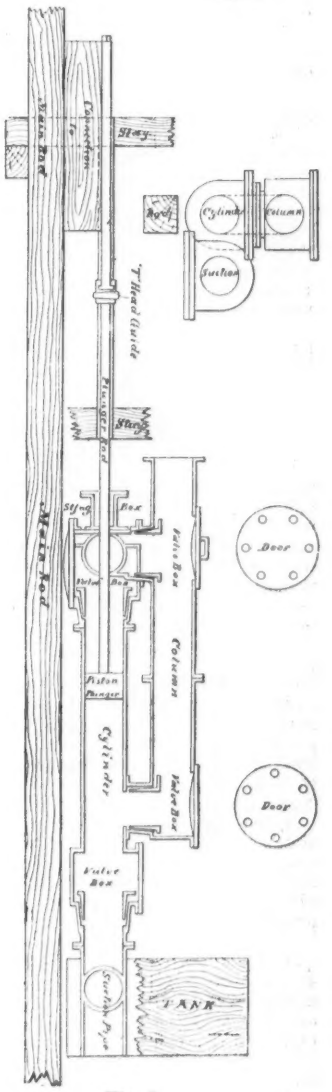


Fig. 4.



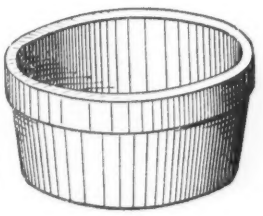


Fig. 2.

Fig. 3.

DOUBLE ACTING CORNISH PLUNGER PUMP.

upper layer of packing, presses the oil reservoir down on the lower layer of packing, which is depressed with the packing without interfering with the supply of oil from the can. The reservoir may be placed in the center or any position in the packing, but a small layer above the reservoir to prevent the oil escaping is all that is necessary. Fig. 3 is a sectional view of the pump showing the connection to the main rod and the T head guide, tank, etc. Fig. 4 is a ground plan of the pump, showing the position of the cylinder, suction pipe, column, valve boxes and main rod when looking down the shaft. The position of the rod, etc., may be varied, of course, to suit the shaft. Fig. 2 is a new bucket gearing cast in a solid ring.

Condition of Iron in Welding.—In a paper by Mr. T. Wrightson, read before the Royal Society last month, evidence is brought forward to show that the welding of iron and steel is similar in character to the regelation of ice. Iron has been found to expand in passing from the liquid to the plastic state and then contracts to the solid form. Experiments at the Mint have also shown that at the welding point iron cools under pressure. Welding differs from melting pieces together in that in the former case the union takes place below the temperature of fusion.

ABSTRACTS OF OFFICIAL REPORTS.

Oregon Improvement Company.

The report of this company for the fiscal year ending November 30th, 1894, gives the business of its coal department, including the output of the Newcastle and Franklin mines in Washington, owned by the company, as below:

	1893.	1894.	Changes.	P. c.
Gross earnings	$681,842	$660,294	D. $21,548	3·3
Expenses	525,966	514,405	D. 11,561	2·2
Net earnings	$155,876	$145,889	D. $9,987	6 9
Proportion of expenses	77·1%	77·9%	I. 0 8%	...

No statement is given of the tonnage of coal mined. Expenditures charged to construction were $830 for prospecting coal lands, and $805 for coal bunkers at Portland.

The steam collier, "Willamette," was occupied four months in carrying coal to Alaska, and nearly all the rest of the year in the local coal trade between Seattle and San Francisco. She carried in all 43,101 tons freight; her gross earnings were $102,327, and the expenses, $77,668, leaving the net earnings, $24,659. The earnings showed an increase of $56,498 gross and $24,547 net over 1893, due to the fact that the vessel was steadily employed last year.

Montana Mining Company, Limited; Montana.

The report of this company covers the half-year ending December 31st, 1894. The revenue account at the London office shows a profit of £24,039, of which £4,176 was applied in extinguishing the loss shown in the balance sheet for the last half-year, and £16,428 in payment of a dividend on January 7th, leaving a net balance of £3,435 to be carried forward to the next half-year. The earnings and expenses are given below. The expenditure during the half-year charged to capital account comprises: Cost of re-timbering No. 1 shaft, £969; legal expenses in connection with the lawsuit, £300; expenditure incurred in patenting and perfecting the company's title to adjoining claims, £228, making a total of £1,497.

During the six months the mills reduced 38,010 tons of ore, which yielded in bullion bars and concentrates (on assay coinage value) $539,148, equivalent to $14.18 per ton, as against $12.61 per ton in the previous half-year. The actual realized and realizable value of the ore amounted to $414,741, the difference on the coinage value being $124,407 or 2·30% on the gold, and 57·04% on the silver produced. The average net realizable value of the ore treated was, therefore, $10.91. The proportionate money value of the precious metals contained in the ore was gold 78·81, and silver 21·19%. The total produce was 16,186 oz. gold and 158,595 oz. silver. The realized value of $10.91 per ton was made up of $8.59 in gold and $2.32 in silver. The gross earnings were made up as follows: Sales of bullion, 8317.671; concentrates, $99,917; total, $417,588. From this is to be deducted $2,847 for express and refining charges on bullion, making the net earnings $414,741 for the half year.

The 110 stamps were kept steadily at work, the largest amount crushed in one month being 6,480 tons; and the smallest 6,140 tons. The results of the year, on 38,010 tons crushed, were:

	Amount.	Per Ton.
Total returns	$414,741	$10.91
Working expenses	$211,347	$5.56
Operating No. 1 shaft	3,011	0.08
Prospecting	58,918	1.55
Extraneous expenses	9,401	0.25
Total expenses	$282.707	$7.44
Net earnings	$132,034	$3.47

As compared with the first half of the year there was an increase of 3,397 tons crushed and of $56,841 in the net returns.

The highest price realized for silver was 66½c., the lowest 59⅝c., the average being 63c. per ounce for the half-year.

Owing to unexpected delays the trial of the equity suit against Charles Mayger and the St. Louis Mining Company did not take place in December, but it will probably occur in April or May.

Hecla Consolidated Mining Company; Montana.

The report of this company for the year ending December 31st, 1894, shows that the ore mined during the year was 7,984 tons first class and 1,235 tons second class. The cost of mining per ton of first-class ore was $14.525; including both first and second-class ore, the mining cost was $12.58 per ton. Since the commencement of work in 1876 the ore statement shows a total of 160,807 tons first-class ore taken out and 19,815 tons concentrates, or 180,622 tons in all.

The concentrator statement shows that 10,083 tons in all were treated, of which 254 tons were second-class ore from mines and 9,829 tons second-class ore from the tailings dam. The ratio of concentration was 11 to 1, and 871·3 tons concentrates were produced. The cost of working was $7.251, being 71·91c. per ton of crude ore treated, or $8.325 per ton of concentrates produced. The average assay of the crude ore showed 4·35% lead and 14·6 oz. silver per ton. The assay value of the concentrates was 23·2% lead and 42·1 oz. silver per ton.

The smelter statement for the year is as follows: Ore treated, 8,261 net tons; fluxes used, 1,159 tons iron ore, 536 tons lime rock, and 2,558 tons slag; fuel used, 148,146 bushels charcoal and 2,514,200 lbs. coke; cost of fuel, $2.88 per ton of charge mixture on $4.28 per ton of ore. The average assays showed 23·35% lead, 21·57% silica, and 75·28 oz. silver per ton. The total production was 343·34 oz. gold; 616,809 oz. silver; 362,897 lbs. copper and 2,941,912 lbs. lead bullion. The average proportion charged was 67 5% ore and 32·5% flux. The average fuel used was 54% coke and 46% coal; daily average of fuel consumed, 6·31 tons.

Mining Superintendent S. A. Barbour says: "The ore credited to the Atlantis mine came from the ore shoot we found in the summer of 1893. We have followed it back east some 800 ft., and the size of the shoot is now very much less than during most of the year. It has also gone in different directions, so that it is nearly impossible to follow the ore systematically, and consequently the expense of handling the ore and waste is greatly increased. On the True Fissure mine no work has been done except on Mt. Sheep ore shoot No. 2, from which was produced the ore credited to the True Fissure mine. This shoot struck the lower dike and fault in September, and subsequent work has failed to find it on the west side of the dike. We ran an incline south on the dike and fault some 214 ft. At 190 ft. we put up a raise 75 ft., but could find no sign or trace of the ore. In the Cleopatra mine the ore came from stripping the old workings, mostly from the Big Flat up to the surface. These old workings produced a fair amount of ore during the first months of the year, but the last eight months the amount was rather small. At the Cleve and Avon mines most of the ore produced came from the old workings above the 200 ft. level. In the spring we found some ore going down in the limestone under the old workings of No. 1 level. We followed it down 170 ft. on an incline of about 35°, then it dropped nearly vertical, and to facilitate exploring it No. 2 level was extended to these workings, and subsequently No. 3 level of the Cleve incline. In driving No. 3 level we crossed a shoot of quartz with some ore in it, and commenced exploring work on this shoot in October. It has opened up quite extensively, not so much in width as in length. We have followed it 140 ft. southwest, and it is still going ahead in that direction. I now think that the Cleve and Avon are probably separate ore shoots, and that this body or shoot of ore we found in extending No. 3 level southwest may belong to the Avon shoot. It will take some time to determine that and prove it up. No work has been done on the other claims."

The financial statement is as follows: Total cash income, $446,769; total expenses, $290,596; net profit for the year, $156,173; dividends paid, $120,000; balance, $36,173. Adding the surplus January 1st, 1894, which was $106,339, makes the total cash surplus, January 1st, 1895, amount to $142,512. The dividends paid, $120,000, brought the total amount paid by the company to the close of the year up to $2,040,000. The total earnings were $50.45 and the expenses $32.82 per ton of ore, including concentrates, leaving the net earnings at $17.63 per ton.

The report of General Manager H. Knippenberg says: "Taking into consideration the low price of both silver and lead, and that on account of the scarcity of ore we were able to operate only one furnace, I regard the year 1894 as the most profitable in the history of the company. The dividends paid in 1894 were earned, and some profit, over and above, was added to the surplus. The three dividends in December were paid at my request, as I was anxious that my 14th annual report should show dividends paid in excess of $2,000,000, simply as a matter of sentiment and human pride on my part.

"Most of you are already aware that the past year's success was entirely due to the rich strike of ore in the Atlantis mine. The Cleopatra mine is worked out, and we have practically abandoned it. If there is before this company any dividend future, the ore must come from the lower mines, especially the Atlantis, the Cleve and the Avon.

"The concentrator was operated on tailings, day and night from June 8th until October 1st, the product being 871·3 tons of concentrates. The total expense was $7,251, the average cost per ton of concentrates being $8.325. This test shows, to some extent, the value that may be placed upon the pile of tailings now on hand, and which I have not put into any of my calculations in years past.

"The Iron mines have been run by contract, during the year 1894, paying $6 a ton for iron ore delivered at Glendale. Charcoal has been delivered, under contract, at 11c. per bushel. Coke has cost from $13.50 to $13.80 per ton, delivered at Melrose.

"As to the future, I can say no more than I did a year ago. The light we may have, from day to day, must govern us in our operations."

Central Mining Company, Michigan.

For the year ending December 31st, 1894, the directors report that the production of mineral was 444 tons, 1,055 lbs., of which 415 tons, 590 lbs. yielded about 66·2%, or 549,871 lbs. of refined copper. The following is a summary of the year's business: 549,871 lbs. of copper at about 9·32 cents, $51,227; 29 tons, 465 lbs. mineral on hand, valued at $2,555; total production, $53,782; add interest received, $1,947; total receipts, $55,729. The expenses were: Working expenses at mine, $92,006 (16·73c. per lb.); smelting, freight and all other expenses, $12,762 (2·33c. per lb.); making the total expenses, $104,768 (19·06c. of copper), and showing a deficiency in 1894 of $49 039. The surplus in 1893 was $127,838, to which is to be added amount credited real estate for stumpage, $622, making a total of $128,460. This leaves the net surplus December 31st, 1894, at $79,421.

The financial statement further shows the assets and liabilities on December 31st, 1894, as follows: Cash and loans, $57,211; copper on hand, $5.830; accounts receivable, $712; cash and accounts receivable at mine, $4,573; supplies at mine, $11,622; total assets, $79,948. The liabilities—accounts payable and agents' drafts—amounted to $527, leaving the balance of assets $79,421, as above.

The summary of receipts and expenditures of the company from its organization to December 31st, 1894, is as follows:

Capital stock paid in		$100.000
Copper sold, including silver		9,573,456
Profit on timber sold		79,012
Total receipts		$9,752,468
Net expenditure for mining operations, buildings and machinery, smelting and marketing copper, and incidental expenses	$7,700,568	
Net cost of Madison, Northwestern and Eagle river lands	2,479	
		$7,703,047
Balance of receipts		$2,049,421
Deduct dividends paid		1,970,000
Net surplus, December 31st, 1894		...$79,421

The report of Agent F. McM. Stanton gives the following report of operations at the mine during the year. Ground broken, includes the following: Sinking of winzes, 121·6 ft., average cost, $12 per foot; drifting on vein and crosscuts, 1,505 ft., average cost $5.48 per foot; stoping on vein, 1,416 fathoms, cost $10.66 per fathom. The total amount of ground broken in opening and stopes is 2,094 cubic fathoms. The production was as follows: 388 bbls. stamp copper, weighing 544,370 lbs.; 267 hhds. barrel copper, weighing 276,495 lbs.; 77 masses copper, weighing 68,190 lbs.; total, 889,055 lbs. The average yield of mineral per fathom of ground broken was 424 lbs.; average yield of ingot per fathom of ground broken, 279 lbs. The total expenditure of the year is as follows: Mining and surface expenses, $85,162; stamp mill expenses, $6,652; taxes, $2,849; total, $94,662; deducting rents received, $2,656, leaves the total expenses, $92,006.

Mr. Stanton says: "The 31st level has been extended north on the old

or 'east vein,' on top of the conglomerate belt 336 ft., and a winze sunk from the 31st to the 32d level. The vein at the winze was about 3 ft. thick and looked fair, but, on extending the level north, it narrowed to a few inches in thickness, and in some places could hardly be recognized. Directly over the conglomerate the vein is broken up and very poor for a distance of about 400 ft. north—horizontally; from this point it improves, and carries considerable copper for about 300 ft. further north, when it again becomes poor. This feature occurs also in the five levels above. The 32d level has been extended north 607 ft. on the east vein, and 40 ft. south on the west vein. The north drift opened a small patch of good ground at the the bottom of the winze which was sunk from the 31st level, but this only extended a short distance north and south of the winze and about 30 ft. above the level. The south drift on the 'west vein' has failed to show anything but hard and barren ground. Three belts of amygdaloid have been crossed by this drift, but they all proved to be barren.

"All developments thus far seem to indicate that the vein has been 'faulted' by the 'Kearsarge conglomerate,' and thrown to the west. Very little copper has yet been found in the vein under the conglomerate belt. In order, however, to make a conclusive test of the bottom of the mine, it will be necessary to run a few exploratory drifts, and should the deposit immediately over the conglomerate which we are now working prove to be as productive, as is indicated by the present openings, sufficient copper may be obtained to pay for a large portion, if not all, of this exploratory work.

"For operations on the present scale only one engine is used, the mine being kept unwatered by hoisting water in the skip when it is not needed for other purposes, thus avoiding the expense of keeping the pumping plant in operation."

The director's report says, in conclusion: "The continued decrease in production indicates the approximate exhaustion of the ore-body upon which we have worked from surface to the thirty-second level. The drifts in that portion of the vein below the conglomerate, which we now call the 'West Vein,' have continued to open a vein of fair size, but nearly barren of copper and not worth working. The failure of this part of the mine to give us any copper, and the narrowing up of the vein above the conglomerate or 'East Vein' to a point that its product became smaller and smaller as work progressed, determined the directors to suspend operations in the regular way in order to limit the monthly deficiency. The suspension took effect on August 1st, 1894, when the principal part of the working force was discharged, the stamp mill, compressors, pumps and other machinery were stopped, and a rigid reduction of expenses was made in conformity with plans for further exploration by a small force, at the most promising points in the mine, in the hope of developing a new ore-body, and for the purpose of making available, as far as practicable, any copper that may yet remain in the old one.

"A production of about 20 tons of mineral per month has been made since these plans were put in operation, and it is hoped that during the current year some discoveries may be made that will materially improve our prospects and render it desirable to increase the working force.

"The suspension of so large part of the work made it desirable to close the mine store, and we were able to sell the remaining stock of merchandise in a lump without loss. It also became advisable to dispose of a large part of the stock of supplies, machinery fittings, etc., although at some sacrifice in price and expense of transportation to points where they could be sold."

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Construction of an Oil and Gas Mining Lease.

A lease for the sole purpose of mining petroleum and gas, and piping the same, of "all of that certain tract of land . . . described as follows . . . containing 40 acres, . . . excepting reserved therefrom 10 acres," specifically described, "upon which no wells shall be drilled, without consent of the party of the first part," is a grant of oil and gas well right for the whole 40 acres, with merely a limitation as to drilling wells on the 10 acres.—Brown v. Spilman, 15 U. S. Sup. Ct. Reporter, 245.

Statute of Limitations and Mining Claim.

The statute of limitations does not commence to run against a mining claim till the patent thereto has been issued; and this is well settled by a number of decisions by the Supreme Court of Montana.—Clark v. Barnard, 38 Pacific Reporter, 834.

COURT OF APPEALS OF NEW YORK.

Right of Foreign Railroad Company to Condemn Land.

The Legislature of a State may authorize a foreign railway company doing business in the State to acquire land by condemnation proceedings. N. Y. & H. R. Co. v. Welsh, 28 N. E. Rep., 378.

SUPREME COURT, SOUTH CAROLINA.

Liability of Master for Defective Appliances.

Evidence that a master, instead of supervising the erection of a gas holder in another State, sent another person to attend to the erection, who had full charge of the work, tends to show that such person was his master's vice-principal, and makes the master liable for his neglect as to defective appliances.—Whaley v. Bartlett, 28 S. E. Rep. 745

SUPREME COURT, GEORGIA.

Evidence of Habitual Care by Employe not Admissible.

On the question whether, in the particular instance, an employe who has been injured in the use of dangerous machinery, evidence of his character for prudence or recklessness of conduct of such business is inadmissible, either against him or for him.—Atlanta & W. P. R. Co. v. Smith, 20 S. E. Rep. 763.

SUPREME COURT, ARKANSAS.

Liability of Principal to Agent.

Where a principal requests his agent to purchase for him a certain machine, without stating the price to be paid for it, the agent is authorized to pay the market price for same, and recover the amount paid from the principal, even though the machine does not prove to be what the principal expected.—Clifton v. Ross, 28 S. W. Rep. 1085.

SUPREME COURT, COLORADO.

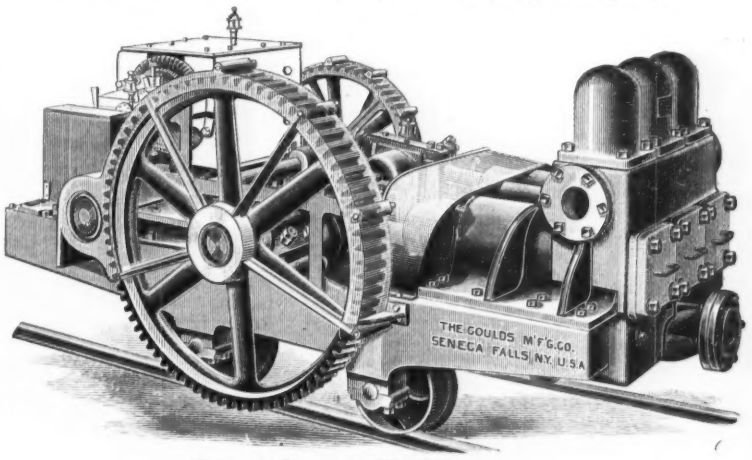
Action of Minority Stockholder to Dissolve Mining Company.

A complaint which alleges that the directors of a mining company, owning a majority of its stock, have, in furtherance of a conspiracy to decrease the value of its stock and defraud the minority stockholders, been negligent in its management, reciting particulars: that they have attempted to change the situs of the corporation to a place without the State, holding meetings of stockholders there, without notice, in violation of the laws in that regard; that under their management the corporation has failed to keep any office in the State, as provided in its articles, or to keep stockholders' or other books therein; and that such directors have appropriated stock set aside as working capital, refusing to account therefor, sufficient shows a right of action in such party, suing in equity for himself and other stockholders for a dissolution of the corporation and the appointment of a receiver.—Jones v. Pearl Mining Co., 38 Pac. Rep., 700.

A NEW ELECTRIC MINE PUMP.

The general application of electricity to the various operations in mining work has made it possible to supplant older and less economical types of apparatus with more efficient machinery electrically operated. The advantages of an electric mine pump are many. It can be made of such form as to be easily adapted for use in shallow cuts; it can be easily moved from place to place; it can be started or stopped at a moment's notice; it is economical in operation and does not require a skilled engineer to operate it.

Gould's horizontal triplex electric mine pump, manufactured by the Gould's Manufacturing Company, is a combination of a pump of the triplex pattern and an electric motor, direct geared, and mounted on a track to facilitate moving it about. The pump has three plungers of phosphor



GOULD'S ELECTRIC MINE PUMP.

bronze, outside packed, attached to the crank shaft by connecting rods at 120° apart. This method of construction permits the plungers to follow each other and overlap, giving a constant flow and securing great efficiency.

The cylinders and glands are bronze lined. The motor and pump gears are of iron, machine cut, and motor pinion of bronze. The materials of which this pump is made are unaffected by mine water, and all the exposed parts are duly protected from falling debris by covers. The gears and pinions are machine cased. The pump is of such design as to be especially adapted for working in shallow cuts.

These pumps are in operation in the William "A" Colliery, of the Connell Coal Company, Scranton, Pa.; Union Colliery Company, Victoria, B. C.; Raybould Coal Company, Columbus, O., and the Albion Iron Works, Victoria, B. C.

Gold in Perak.—A correspondent of the "Straits Budget" writes: The gold mining operations in Batang Padang are exciting great interest in Perak. For a great many years the Chinese have been working alluvial gold (which is generally found with tin) in the district, and it is believed that no insignificant quantity of the precious metal has been won and sent out of the State without any duty being paid to the Government. Owing to the difficulty of fixing duty on gold, about 14 or 15 years ago the Government raised the tin duty in this district by $1.50 per bara, and so it remains to this day. Just, two years ago Mr. Addis, late manager of the Melbourne Tin Mining Company, started prospecting on the other side of the river, and while washing for tin came upon gold quartz cropping out on a block of land, the mining rights of which were afterward purchased, and it is now known as Bukit Mas. The property, which is 25 acres in extent, previously belonged to a Chinaman who worked tin there. Only a few thousand dollars were put into the work, and in spite of the machinery being unsuited and by no means sufficient for its constantly increasing requirements, the mine has more than paid its way. Mr. Baldwin, who is the largest shareholder in the company, or syndicate, started prospecting northward and sunk a shaft half-a-mile distant in that direction. This shaft is 60 ft. deep. A level was opened at that depth, and the lode was struck exactly where expected. On the strength of this discovery, Mr. Baldwin is forming a company to extend Bukit Mas in a northerly direction. The capital of this company is to be $30,000, in 600 shares of $50 each; and, I am informed, applications have been received for the whole of the shares. Two other Europeans are working in the Batang Padang district. Mr. Aylesburg is prospecting for gold in a southerly direction from Bukit Mas; and Mr. Bamforth is sluicing tin on the Chumor Hill, two miles distant from Tapah, and is getting some rich stuff-tin.

Trial of Chase-Gant Armor Plate.—Recently a test was made at the Indian Head proving grounds of a second plate manufactured by the Midvale Steel Company, under what is known as the Chase-Gant process. This process, according to ordnance officials, is the application of a chrome face to a steel plate. Armor similar in character was tested last September at the army proving grounds at Sandy Hook, and on the first fire was smashed to pieces. The same results attended the plate tried at Indian Head. It was 5 ft. square and 10 in. in thickness. As there was no 8-in. gun at the proving grounds, a 6-in. gun was used. Only one shot was fired—an armor-piercing projectile, weighing 100 lbs., having a striking velocity of 2,104 ft. a second. The shell was stopped and broken up, but the plate itself suffered severely from the impact, being cracked to pieces.

Condensation of Blast-Furnace Fumes.—The condensation of dust and metallic fumes forms the subject of a communication to the "Echo des Mines," by M. U. Le Verrier, Ingénieur-en-Chef des Mines. For blast furnaces the purification of gases has great importance, with a view to obtain the best results in stoves for heating the blast. Attempts have often been made to wash the gases by direct contact with water; but these methods appear to be generally abandoned. It is now sought to insure the cooling down of the outside of the pipes, and for this purpose suspended cast-iron pipes, or squares made of hollow bricks, or very thin walls of cement strengthened by metal framework, are employed. For provoking the deposit of dust, it was formerly sought to reduce the speed of the current by causing it to pass through chambers of large sectional area; but it appears that better results are obtained by interposing obstacles for increasing the surfaces of friction. Freudenberg was the first to apply this principle by placing rows of iron plates upright in the flues; and the wires suspended in the Tarnowitz conduits are perhaps still more efficacious, and especially easier to manage. By increasing the number of obstacles, it has been found possible to make a kind of filter; and at the De Wendel Ironworks, Hayange, Lothringen, the blast-furnace gases are completely filtered across a bed of iron "straw."

Cost of Torpedo Boat Destroyers.—A blue-book just issued in England gives, incidentally, the contract price of a large number of the torpedo boat destroyers now being constructed by private firms for the navy. These vessels are about 200 ft. long, of about 230 or 240 tons displacement, and with engines of 4,000 to 4,500 I. H. P., attained a speed of 27 knots. Messrs. Yarrow, London, have built three of this larger type, the price for each being £37,400. Messrs. Thornycroft, London, have also built three at £36,430 each; Palmer's Shipbuilding Company, Jarrow, get £37,107; Mr. J. S. White, of Cowes, £39,113, the engines in this latter case being supplied by Messrs. Maudslay, Sons & Field; Messrs. Doxford, of Sunderland, get £37,001. Thus these firms average about £37,000. Messrs. Thomson, Clydebank, have done the work for £34,792, the Naval Construction Company at Barrow are to get £33,977. By way of comparison it may be interesting to state that the French paid £30,528 for a 27-knot torpedo boat only 144 ft. long, of 123 tons displacement and 2,700 I. H. P. The costs are not available for any larger torpedo boats of the French. The torpedo boat "Aventurier," 151 ft. long, of 148 tons displacement, and 1,500 I. H. P., and 23¼ knots speed, cost the French £18,354; the total English fleet of 10 first-class torpedo boats, 140 ft. long, and of 23 knots, cost on an average £14,491 each. The same Parliamentary book states that the contract price of the hull and machinery of the 14,000-ton cruiser "Terrible," with Belleville boilers and engines, to give 23 knots speed, is £542,347. It is being built by Messrs. Thomson, Clydebank. The contract price for the sister ship "Powerful," building at Barrow, is £535,252.

Geodetic Surveys in Russia.—Colonel Venukoff recently communicated to the Academy of Sciences in Paris a memorandum concerning important work done under the charge of the general staff of the Russian Army in order to obtain a number of levels of the greatest possible precision. The work was begun at the instance of General Stebnitzki and was carried on along the line of some of the principal Russian railroads. It has been in progress for several years, but last year was so far advanced that it was possible to bring together and compare all the results obtained and to issue a catalogue containing a list of 1,090 stations of which the levels had been obtained. In each case the exact altitude was measured by several different officers, but with the same instruments the object of these different measurements being to correct and ascertain as far as possible the personal error. The total length of the lines run was a little over 13,000 KM. In addition to the leveling done the staff has erected stone monuments at a number of principal stations to serve as starting points for future lines. M. Venukoff's memorandum states that no level determined in Russia is greater than 338 meters above the sea. For the most part the figures in the published list vary between 110 and 150 meters, showing how level the country is in eastern and southern Russia. So far as geography is concerned, the most important part of this work has been to establish the practical identity of the level of the three seas: the Baltic, the Black Sea, and the Sea of Azov. The question whether the levels obtained for these three interior basins varies from that of the ocean, and how much, is still to be decided.

The Monastery Diamond Mine.—The "Standard and Diggers' News," of Johannesburg, South Africa, says the Monastery diamond mine is situated some 60 miles from Winburg Road Station, on the borders of the Conquered Territory, about six hours from the town of Winburg and 18 miles from the Basuto border. There are peculiar characteristics in connection with this property which make it unique. Various descriptions of a lengthy character have been given of the ancient workings found in the mine. The old vertical and incline shafts, as well as the drives, which show considerable engineering skill, betoken the presence of a past civilization. The skulls unearthed exhibit every trace of their belonging to a white race. This debris is found to a depth of about 40 ft. to 50 ft., and the fact that they worked for diamonds is found in the more recent knowledge that the debris when washed showed very different results as compared with the virgin soil which has already been put through the machines. The argument has been adduced that these ancient workings simply represent native activity 200 or 300 years ago, to obtain the carbon (bitumen) which thickly abounds. This carbon, however, is obtainable in large and ever-increasing quantities in all parts of the mine, the debris included. A tour of the mine showed that the debris had been worked out to the depth of 60 ft. from the present surface, leaving a hole 150 × 150, or about 25 claims. This debris was easily discernible, while here and there the virgin soil made itself self-evident. The hardbank or blue-bar is now being cut through, and the "blue" proper is expected to be reached at a further depth of 30 ft. or 40 ft. But what strikes the visitor is the massive character of the various indications which make up a diamond mine. Garnets are found of enormous size, 12 lb. and 15 lb. weight; carbon in huge boulders of 15 lb. weight, mica in solid lumps of the same weight, and crystals of a giant character. All these mineral indications in other mines are on an infinitesimally small scale. Garnets of the largest size in the Kimberley mines are not above the size of a man's thumbnail, while the mica is found so small that it almost requires a microscope to see it. Crystals, too, are comparatively small. The first rush in modern times which took place in connection with this mine was in the year 1876, and was called Viljoen's Rush. These diggers were mostly Dutchmen, fired with the diamond successes which were then showing at Kimberley. They were only allowed to work under restrictions, having to cart the stuff some considerable distance before they could sort it. As they were only working in top debris stuff little or no finds were obtained, and the workings were eventually abandoned as non-payable. Nothing further was done till two years ago, when a local syndicate acquired the refusal of the ground, and in a small way began to wash the debris. The samples of diamonds, garnets, mica, greenstone, and carbon brought into Johannesburg by Captain Tonking have astonished everybody who understands anything at all about them. The diamonds already found during the past six months amount to 1,100 carats, some of them being of good size, one weighing 17¼ carats pure white. The quality of the diamonds found is in every respect similar to those found in Jagersfontein, and, on an average, is equally as good. It must be remembered that hitherto the stuff washed has been mainly debris, which had been all worked before, so that the average find of diamonds per 100 loads did not exceed 8 to 10 carats. Latterly, however, with more virgin ground being worked, the average has crept up to 15 carats per 100 loads. From one lot of 40 loads, which was taken from what is known as the "paddock" in the center of the mine, at a depth of 60 ft., a yield was obtained of 20¾ carats. Jagersfontein only now gives a little over 11 carats to the 100 loads. Up to last year it only gave up 8 or 9 carats to the 100 loads. Klipfontein gives 4 carats and Koffeyfontein 4½ carats to the 100 loads.

PATENTS RELATING TO MINING AND METALLURGY.

United States.

The following is a list of the patents relating to mining, metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

TUESDAY, MARCH 17TH, 1895.

535,882. Process of and Apparatus for making Sulphuric Acid. Eugene J. Barbier, Paris, France. Serial No. 476,424 patented in France Dec. 4, 1891, No. 217,844; In Italy, June 30, 1892, LXII, 498; in Belgium, July 6th, 1892, No. 100,396, and in England, July 11, 1892, No. 12,726. The process consists in causing the vapor of sulphurous acid from burning brimstone or pyrites to circulate through a series of reaction towers in succession, subjecting such vapors to the action of a divided stream of sulfonitric acid or dilated nitric acid in the upper part of such reaction towers and to the action of nitrous and aqueous vapors in the lower part of such towers.

535,944. Process of and Apparatus for producing and liquifying acetylene gas. Edward N. Dickerson, New York, and Julius J. Suckert, Ridgewood, N. J. The process consists in generating and liquifying acetylene gas by the decomposition of an alkali metal or alkaline earth metal carbide with water, thereby generating acetylene gas and then liquifying said gas at suitable temperature under the pressure developed by the generated gas.

535,988. Manufacture of Gas. George H. Harvey, Pittsburg, Pa. Carbureting air, conveying it under pressure to a mixing device, conveying oil to said mixer by means of pressure in the carburetor, spraying the oil by the pressure of the carburetor air into a heated retort, the previously carbureted air being used to inject and atomize the residual oil from the carburetor and conveying cooked vapors to a main or the like.

535,995. Artificial Stone. John H. Power and Rufus M. Power, Chico, Tex. A composition consisting of Quanah cement, Portland cement, sand, alum, salt, gum arabic, and sulphur combined in the manner and proportions.

536,078. Apparatus for Manufacture of Gas. George W. Harris, Kingston, N. Y. The combination with a double coal-retort, consisting of two compartments, the upper one to contain bituminous coal, and the lower one anthracite coal or coke, and to be supplied with superheated steam, this retort having an independent stand pipe, of an oil retort having a stand pipe, the two retorts being connected.

536,082. Converting Cast-Iron into Malleable Iron or Steel. Samuel Hufty, Camden, N. J., and Joseph K. Caldwell, Philadelphia, Pa. The mode consisting in first heating said articles in an open hearth furnace by a reducing flame to a temperature somewhat below fusion, and, after the iron has reached the desired temperature, and while it is still subjected to the action of said reducing flame, bringing into direct contact with the iron a decomposable oxygen-bearing fluid in such volume that by its decomposition oxygen is freed in volume sufficient to combine with and eliminate carbon from the heated iron.

536,112. Pulverizing mill. Charles R. Western, London, England. Patented in England September 6th, 1893. No. 16,771. A ball-mill having a horizontal hollow axle or shaft, a drum mounted on said shaft and composed of bars having suitable interstices between, and arranged to form in cross-section a screen which revolves with the shaft, but has its axis inclined to that of the shaft.

536,151. Valve-gear for Regenerative Furnaces. John Kernan and Robert B. Yuille, Pittsburg, Pa., Assignors of one-third to Charles W. Sarricks, same place. A valve-gear comprising a valve chamber provided with diagonal valve-seats crossing each other at or near their middle, and slide-valves fitted to slide on the said seats.

536,152. Method of Plating Aluminum. William H. Legate, Hartford, Conn. The method of plating aluminum consists in subjecting the metal to treatment in a pickling bath, then rinsing the metal, then washing in a potash solution, then washing again, then treating it in a solution in which flaky carbon, as soot, is an ingredient, then plating the metal with a layer of zinc, then plating it with a layer of copper, then rinsing the metal, and finally plating in an ordinary bath with a metal desired.

536,172. Rock Drill. William H. Dixon, Denver, Colo., assignor, by direct and mesne assignments, of eleven-sixteenths to Charles E. Gartman and Frank A. Joslin, same place. Combination with the reciprocating ram, the feed screw and the rack bar, of means for actuating the feed screw consisting of a ratchet fast on the screw shaft, a rocker plate aperture to receive the screw shaft which forms its pivot, said plate projecting on both sides of the shaft and carrying a dog engaging the ratchet, a bell crank lever having one arm engaging the rocker plate on one side of the shaft, a spring engaging the rocker plate on the other side of the shaft, and a cross head carried by the ram and adapted to engage the other arm of the lever which lies in its path.

PERSONAL.

D. .I Ezekiel, president of the Colorado Mining Stock Exchange, of Denver, died in that city last week.

Jay C. Morse has resigned the presidency of the Illinois Steel Company, and has been succeeded by John W. Gates.

A. C. Savage, constructing engineer for the Trenton Iron Company, is in Jamaica surveying lines for proposed Bleichert tramways.

Mr. Percy L. Fearn, mining engineer, of Chicago, Ill., has returned to that city from Chihuahua, Mexico, where he has been examining the mining properties of the Santa Eulalia District in the interest of a New York syndicate.

Mr. Chas. O. Shields, mining expert, of Shields & Middleton, Denver, Col., started the 23d instant for an extended trip through Guatemala, Central America, in the interest of a company of San Francisco capitalists to make an examination of and report on various mining enterprises in which these gentlemen are interested. He expects to spend several months on the trip.

Mr. Edward P. North, who has just been appointed water purveyor in the Department of Public Works, New York City, is an engineer of wide and varied experience. A graduate of Union College, at Schenectady, in 1856, his earlier work was on railroad construction in the West: later he was for several years employed on the Union Pacific Railroad, having a special charge of the tunnel building. He was for a time chief engineer of the Sinaloa & Durango Railroad in Mexico, and had some experience on mining work in that country and in Utah and Colorado. Taking especial interest in municipal work, after his return from Mexico, Mr. North went to Europe, where he spent several years studying the methods of road construction and city pavements in England, France and Germany. Soon after his return from Europe he prepared a paper on road building, which received the gold medal annually offered by the American Society of Civil Engineers. He superintended the laying of asphalt pavement on several streets in New York, and also did some engineering work for the Park Department on the new avenues north of the Harlem River. While Mr. North has strong political convictions, which he has never hesitated to express, he is in no sense of the word a politician, and the appointment of a man so thoroughly equipped for good service in the Department of Public Works deserves especial mention, since it is one of a class to which New York has been little accustomed, and may be taken as giving excellent promise for the future.

OBITUARY.

James Hall, for some years manager of Cooper, Hewitt & Co.'s iron mill in Bushwick, N. Y., and later manager of the firm's office in New York City, died at Brooklyn, on March 22d, aged 78 years.

Caleb S. Whitman died in Gardiner, Me., on March 23d. He was born in Boston in 1806, graduated from Harvard College in 1831, and practiced medicine in Boston until 1843, when he gave up his business and went to Gardiner. He was interested in mineralogy, and had a large and valuable private collection of minerals.

James E. Oliver, professor of mathematics in Cornell University, died in Ithaca, N. Y., on March 27th, aged 66 years. He was born in Portland, Me., in 1829, and graduated at Harvard College in 1849. From the time of his graduation until 1871 he was assistant in the office of the "American Nautical Almanac." In that year he accepted the chair of assistant professor of mathematics at Cornell University. In 1873 he was made full professor. Prof. Oliver had a high reputation as a mathematician. He was noted for the remarkable clearness with which he presented difficult problems to his class. His published works are few in number. Besides his scientific work for the "Nautical Almanac," he also published a few papers in the "Journal of Mathematics." He also published text books in higher algebra and trigonometry. He had a wide interest in study outside of his own department. The relations of mathematics to physics and the investigations in chemical forces attracted his attention. He was a member of the American Academy of Arts and Sciences, American Philosophical Society, and National Academy of Science.

SOCIETIES AND TECHNICAL SCHOOLS.

Engineering Association of the South.—The regular monthly meeting of the association was held March 14th. The motion of Professor Magruder, which had been ordered to lie over until this meeting, was called up and carried without discussion. Therefore the association will meet hereafter on the fourth Thursday of each month, in addition to the regular business meeting on the second Thursday, for informal topical and journal discussions. Various communications were read and proper action ordered. The paper of Professor Schuermann on "A method of Determining the Probable Volume of Traffic on a New Road," was concluded and proved to be both valuable and interesting. His investigations, as applied to the traffic of local roads in Tennessee and Kentucky, made a very satisfactory comparison with the actual statistics of these roads. The discussion of "The Preservation of Iron Surfaces," was taken up by Professor Magruder, and was indulged in by quite a number of the members.

Engineers' Club of St. Louis.—The 414th meeting was held March 20th. The Secretary read the following report: Your Committee on "Standard Gauges for Thickness of Metals" beg leave to report as follows: A letter from the American Society of Mechanical Engineers, dated February 21, 1895, to the Engineers' Club, asks us to co-operate with their society in the matter of recommending a gauge system based on actual thickness and diameters and state it in a decimal system. Your committee are unanimous in the opinion that the old arbitrary gauges now in use are apt to lead to confusion, and the course recommended by the joint committee of the American Society of Mechanical Engineers and the Railway Master Mechanics' Association, is the right way out of the difficulty. It is absolutely necessary in mechanics and in business that standards should be plain, easily understood and of as wide acceptance as possible. Since it is not at present feasible to introduce the French system of measures used all over the Continent of Europe, in our practice, there can be no doubt that giving thicknesses in thousandths of the inch is the best practical method of designation. Your committee therefore proposes the following resolution:

Resolved, That the St. Louis Engineers' Club recommends to its members, and urges upon all persons using a gauge system, to abandon the use of arbitrary gauges and to give the actual thicknesses and diameters in thousandths of the inch.

Resolved, That the secretary of the club be instructed to send copies of this resolution to the secretaries of the other associated societies, requesting them to concur, and to the secretary of the American Society of Mechanical Engineers.

Prof. W. S. Chaplin, chancellor Washington University, then addressed the club on the subject of German engineering schools and engineering education in general. He visited Germany in the summer of 1894, and took occasion to make a special study of the technical high schools in Berlin and Hanover. He was first struck with the size and magnificence of the buildings, the idea being that expenditures of this character would impress the people favorably, and tend to make the schools rank favorably in comparison with the older universities. The schools were provided with elaborate collections of models, representing all sorts of machinery. These models, however, were not used by the students, but by the professors only. Chemistry was taught to engineering students by lectures only. No students, except those intending to be chemists, were allowed to handle chemicals. The theses were accompanied by very fine drawings, but it seemed that all the designs and computations were made by the professors, the student simply executing the drawings under the immediate direction of the professors. It was necessary to pass two important examinations, one at the end of two years and the other at the end of four years, at which time the student graduated, and took the State examination. It was necessary to pass the latter if the student expected to follow the profession and find employment.

The professors in the technical high schools were looked down upon by those in the universities. Engineers were considered technical and not scientific men. In a recent discussion among German engineers regarding engineering education, it was considered that a groundwork in theory was absolutely essential, but it was necessary also that the student be taught the application of the theories to everyday problems.

German engineering students put in from 41 to 44 hours per week at school, while 35 hours is considered large in this country. Besides this, it is necessary to do a considerable amount of homework at night.

The professor had expected to learn many things of value, but was disappointed. He thought that, on the whole, the training given by American engineering schools was much better suited to American conditions. The technical high schools are entirely distinct from the universities. There are no graduate students. Instruction is simply by lectures, text books being used only in mathematics. The standard of entrance is higher than in our schools, and the course of study more thorough, but the field covered is not as wide or as general. The schools are supported almost wholly by Government grants, the fees paid forming probably not 10 % of the income.

INDUSTRIAL NOTES.

The Thomas furnaces, near Birmingham, Ala., which have been idle for nearly a year, will start up in a few weeks. For sometime these furnaces have been undergoing repairs, and now this work has been completed.

The California State Mining Bureau, which has heretofore issued its publications free, excepting for mailing charges, has, owing to the heavy demand for them, found it necessary to make a charge to cover the expenses of publication.

The strike at the Andrews Brothers' mill, at Hazleton, O., was broken on March 27th. The bar mill resumed with non-union men, and the entire finishing department is now running on that basis. The firm has made no effort to start its puddling furnaces.

A record for rapid rail rolling was made by the south works of the Lackawanna Iron and Steel Company, at Scranton, for the week ended March 9th. The converting mill made 6,042 tons of ingots in eleven turns, and the south rail mill rolled 5,201 tons of finished rails.

The American Hoist & Derrick Company, of St. Paul, Minn., with branch offices in Chicago, Cincinnati and New York, has just issued a very complete catalogue for 1895-96 of contractors' and quarrymen's machinery. The catalogue is fully illustrated with the different forms of derricks, hoisting engines, and other types of machinery for contractors' use.

The Berlin Iron Bridge Company, of East Berlin, Conn., is building a large warehouse in New York City for James Everard. The building will be 120 ft. square, 12 stories high, with a steel frame, and will be entirely fireproof. The Metropolitan Electric Company, at Reading, Pa., has placed the contract for its new power house with the same company.

The New York Central Railroad has decided to change its motive power on the Niagara Falls branch from steam to electricity, and the trolley system will be used. Orders have been issued to begin making the changes at once, and every effort will be made to have the road in working condition for the summer excursion travel. It is supposed the power will be furnished by the Niagara Falls Power Company.

The Garden City Land Company, of Chicago, has just completed its contract in furnishing the firebrick for the erection of the West Chicago Street Railroads chimney, at the new power house, Western avenue and Washington boulevard. The chimney, one of the largest in Chicago, is 220 ft. high, with an inside measurement of 19 ft. The top measurement is 20 ft. It took 100,000 firebrick to line the chimney. The Garden City Company has also placed brick in and around boilers, smoke flues, etc., in the new power house, having furnished a total of 300,000 brick for the entire contract.

Some of the recent orders taken by the E. P. Allis Company, of Milwaukee, for power plants are three pairs of 1,000 H. P. vertical cross compound engines for the People's Traction Company, Philadelphia; two 1,000 H. P. tandem compound engines for the Citizens' Street Railway Company of Detroit; two 1,000 H. P. cross compound and two 600 H. P. cross compound engines for the Detroit Railway; a pair of 2,000 H. P. engines for the Union Depot Railroad Company, St. Louis; one 500 H. P. engine for the Kansas City Cable Railwey Company; two 500 H. P. cross compound engines for the Portland Railway Company, Portland, Me.; one 400 H. P. cross compound engine for the El Paso Electric Company, Colorado Springs, Col; six 300 H. P. engines for the Akron, Bedford & Cleveland Railroad Company, Cleveland, O; two 600 H. P. engines for the American Tin Plate Company, Elwood, Ind., besides a number of smaller machines.

The Goulds Manufacturing Company has just begun the erection of new addition to its works at Seneca Falls, N. Y. The construction of this building is necessitated by the steadily increasing business in triplex power pumps. The building will be a modern structure of the slow-burning type. Its length is 86 ft. and width 35 ft. The frame work, beams, columns and roof truss will be of steel. It will be two stories in height, with basement for storage of castings. The main room for heavy machines and erecting purposes will be 22 ft. high and served by an electric bridge crane of 10 tons capacity. The gallery will divide one side into two stories for lighter machine tools. The walls will be of brick, while the skylight and upper windows will be glazed with ribbed glass. The entire main floor is designed to stand a uniform strain of 400 lbs. to the square foot, although a limited area is capable of bearing 600 lbs. to the square foot. It is expected that the building will be completed about June 1st.

The Concord, N. H., Land and Water Power Company, writing to the General Electric Company, says: We have had our triphase plant in operation, since September, 1893, in which month we started the first triphase induction motor operated, for commercial work, from a central station in the United States. We now have over 400 H. P. in motors and over 6,000 incandescent lamps in operation from our two 250 Kw. generators. It is four miles from our station, at the Sewalls Falls, where we have developed over 5,000 H. P., to the center of the city of Concord. The voltage at the city is 2,200 on primaries and 110 on secondaries. The loss between the generators and transformers is 7½% on the heaviest load we have ever had. The generators were put into service, running continuously, with the exception of 1½ hours shutdown every Sunday P. M. for cleaning up, and have never given us trouble. We use the Type F transformer, and with the single exception of having a primary coil open in one, these have proved satisfactory.

The motors are excellent. They start promptly with load and their speed is almost absolute, varying less than 2% from load to running free. The motors and lights are run from the same transformers and starting a motor does not effect the lights any more than starting lights, which took the same amount of current, would. We experience no difficulty in balancing our circuits and a difference of loads between two sides of 25% is not noticeable in any way. We are operating heating and cooking apparatus, as well as laundry and tailors' irons.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" of what he needs he will be put in communication with the best manufacturers of the same.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind, and forward them catalogues and discounts of manufacturers in each line.

All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GENERAL MINING NEWS.

A conference between representatives of the bituminous coal carrying roads was held in Philadelphia on March 22d, in the office of the Pennsylvania Railroad. Chauncey M. Depew represented the Vanderbilt interests in the bituminous coal region in conjunction with F. C. Harriman, of the Beech Creek, and General Manager Orcott, of the Chesapeake & Ohio; President Charles F. Mayer, of the Baltimore & Ohio; President F. J. Kimball and Traffic Manager William C. Bullitt, of the Norfolk & Western, and First Vice-President Frank Thomson and General Freight Agent Joyce, of the Pennsylvania Railroad.

The conference was held for the purpose of considering the Eastern tidewater rate tolls on bituminous coal for 1895 and 1896, and as far as could be learned no decision was reached. The views of those present were harmonious, but it was considered advisable that another meeting should be held before the rate is fixed. This meeting will probably be held in a few days, as the Eastern tidewater rates must be published by April 1st.

ARIZONA.

Pinal County.

Silver King Mining Company.—According to the Phœnix "Gazette" it is reported on good authority that the old Silver King mine has developed a new body of rich ore. For several years it has been thought that the bottom was worked out of it, and it was practically abandoned, the old 40-stamp mill at Picket Post was torn down and moved to another locality, and only a few men were kept to watch the property of the company. Mr. Champion, the superintendent, continued to have faith in the mine, and some time ago set to work doing a little exploring in the lower regions with results said to be satisfactory. The report lacks confirmation, however.

CALIFORNIA.

Mariposa County.

(From Our Special Correspondent.)

Hite.—Instead of having been sold for $100,000 this once famous mine has been bonded for that sum to a San Francisco gentleman and his associates, who will begin a careful investigation of the possibilities of the mine. The Hite mine is situated in what is known as Hite's Cove, on the south fork of the Merced River, 23 miles by road from the town of Mariposa. The discovery was made in 1852 by John R. Hite, then a poor prospector. The first quartz mined was extremely rich and the mine was always self-sustaining. For 20 years the property was worked by the discoverer, who extracted $2,250,000 in gold bullion, the ore running from $10 to $40 and over in the mill. A tunnel was run through the foot wall country (black slate) a distance of 720 ft., cutting the vein about 200 ft. from the surface. Four years later a second tunnel was started and run toward the vein. This tunnel is nearly 1,400 ft. in length and cuts the vein 600 ft. from the surface. Six years were consumed in driving this tunnel. All the stoping was done above the level of this lower tunnel. A winze has been sunk at the present face of the long tunnel, presumably on the vein, to a depth of 250 ft. and three levels run out, but it appears from all that can be learned that the quartz became replaced by slaty material to a great extent and was finally abandoned. Before work was suspended entirely, however, a crosscut was run into the hanging wall, some distance from the winze, and this cut 14 ft. of solid quartz of low grade. The map of the mine workings indicates that this crosscut was several hundred feet east of the trend of the ore shoots. The owner, John R. Hite, still insists that the work in the lower levels was all done in the foot wall. It is the hope of uncovering a new bananza that has induced the prospective purchasers to bond this once valuable property. Should the proposed explorations find the anticipated ore shoot Hite's Cove will once more become a prosperous little town.

Mono County.

Bodie Consolidated Mining Company.—The superintendent's latest official weekly letter says: We extracted 11½ tons of ore from the south drift, from No. 1 upraise, in the 300 ft. level, and from workings of the winze 22 ft. below the 300 ft. level; estimated value from $50 to $55 per ton. The upraise from east crosscut, 40 ft. above the 400, was extended 7 ft., face in hard porphyry. The south drift from upraise, 50 ft. above the 400 ft. level, was extended 14 ft.; there is a small seam of fair-grade ore in the face. The south drift from No. 1 upraise, 300 ft. level, was extended 9 ft.; the ore in the face is from 8 to 10 in., of good grade. The south drift, 50 ft. above the 300 ft. level, was extended 10 ft. on a small seam of low-grade ore.

Riverside County.

(From Our Special Correspondent.)

Salton Mines.—It is understood that a group of mines north of Salton, in the middle of the Colorado desert, has been bonded to Los Angeles people. The veins of that region are above the average in grade, and it is necessary they should be, owing to the difficulties and increased expense met in this region.

San Bernardino County.

(From Our Special Correspondent.)

Some mines in the Monte Negras Hills, near Virginia Dale, are being investigated for Eastern investors. In this district the veins are from 1 ft. to 4 ft. wide, and assay from $10 to over $100 per ton in gold. The district is about 50 miles from Walters Station and 75 miles from Whitewater, near the old Ehrenberg mail route.

Tiptop.—A Denver capitalist is in California for the purpose of examining the Tiptop mine, a silver and copper property, located 36 miles east of Daggett, in Lava Beds District. A large amount of high grade ore has been shipped from this mine to Swansea, Wales, for treatment during the past four years.

COLORADO.

The following mineral surveys were approved by the United States surveyor general of Colorado during the week ending March 17th: Survey No. 9304, Leadville, Tyrant; 9320, Pueblo, Eva L.; 9256, Pueblo, Hussey Fraction; 9364, Gunnison, Fleece Basin, Bank of Slumbullion and Certified Check lodes; 9328, Pueblo, Horn of Plenty; 9366, Pueblo, Overlooked; 9,345, Pueblo, Silver Wave; 429, Am., Leadville, Highland Chief.

Clear Creek County.

Lincoln.—The mill will start up soon and treat the ore from the Lincoln mine. A large amount of low grade ore is piled up ready for treatment. The smelting ore is also being piled up and will be moved at the same time. There is considerable high-grade ore in the lower levels and the sinking of the shafts will probably be pushed farther as the mines adjacent grow much more valuable with depth.

Pennsylvania.—Several veins have been cut by the Pennsylvania tunnel, and the manager, L. Sterberger, has arrived at the mine to investigate the recent strikes and carry on some development work. It is proposed to push the tunnel work and not permit the development on the lodes to interfere.

Silver Age.—The mill is treating ore from a number of mines, and there is a demand for more milling facilities. Mr. Roberts, the manager of the mill, is intending to erect a mill of his own. The owners of the Silver Age mill are also considering the question of increasing the milling capacity. Although the Newton concentrator has been in operation but a couple of weeks, it, too, now proposes to increase the capacity on account of the demand for treating low grade ores by this process.

Gunnison County.

(From an Occasional Correspondent.)

Gunnison Gold Belt.—Gunnison county is looking for a big summer this year owing to the latest developments in the gold belt south of Gunnison city. This belt extends from Lake Fork on the west to the Continental Divide on the east, about 40 miles in length, and is from 6 to 15 miles in width. E. A. Sperry, a prominent assayer and chemist in this section, reports values increasing with depth. At Dubois, G. W. Griffey has started the deep tunnel on Iowa Hill, just west of the town, and has now reached a depth of 60 ft., and has cut 2 good veins which assay well, and he is greatly encouraged. In Poverty gulch work on the Crown Point, Cow Boy and several other properties, has been carried on, and the last mill run on these properties was $24 in gold. The vein is 7 ft. wide and improves with depth. The shaft is now down about 60 ft. Steps are being taken to start up the Spencer mill, which has been in litigation for sometime, and there is plenty of ore waiting for it. The Superior has cut a chute of ore at a depth of 60 ft., and it is the best ore ever found in this property. The Gunnison lode is under lease and bond, and work will be pushed rapidly on this property. The stamp mill on the Iron Cap Mine is working steadily and the trial run of 24 hours gave a return of nearly $75. At Camp Creek, the Good Hope, Vulcan and Humbolt and other claims, will be vigorously worked this month. On Sugar Creek, work is progressing rapidly. Vance & Bennett have sunk 50 ft. on the Golden Harvest and report good ore. On Beaver Creek the Kingsbury mill will probably start soon, as the litigation has been practically adjusted. In Gold Basin the Belmont Company has met with success in its mill. The Lehan & Turner mill at Chance has been running as regularly as their supply of water would allow. The Lucky Strike property is working a full force of men and is making satisfactory developments. The prospectors are all preparing for an active season.

Lake County—Leadville.

(From Our Special Correspondent.)

Bohn.—Major Bohn has run out several drifts that have opened up the ore body. Regular shipments will be commenced shortly.

Bon Air.—Regular shipments of 40 tons a day are being made. There is a big ore body in sight, much of which assays 80 oz. silver to the ton.

Chemung.—This shaft should soon be in contact. At the present writing it is down 595 ft. The indications of ore are to be found on every hand and the ore body cannot be very far away.

Excelsior.—Lessees who have been drifting for some time on this property have met with good results. After sinking the shaft to the second contact a drift has uncovered a body of mineral assays from which return 35 oz. silver and 12% lead. There is over 6 ft. of ore at this time and shipments have been commenced.

Hulda Mining Company.—The ore body disclosed in the Garbutt shaft is very large. Regular shipments are now making, but will not be very heavy until after the ore body is better developed. The shipments are now being made from the 265-ft. level, but the ore body has been opened up 60 ft. below, showing that the body is a good one.

Ibex Mining Company.—In addition to regular shipments from their old shafts, the Ibex Mining Company is prosecuting some important new work. On the Putnam shaft a drill hole is going down 20 ft. a day. This shaft is one of the most southerly of the Ibex properties.

Leadville Development Company.—Chicago capitalists are at the head of this concern which is putting down a shaft on the Mountain Lion lode. The shaft is not down 100 ft. yet, but is in porphyry that is already heavily iron stained, indicating contact.

Rex.—Within 10 days, barring accidents, the shaft should be in the ore body encountered by the diamond drill. There is a diversity of opinion just now as to whether the shaft will go directly into the ore body. Mr. Max Boehmer claims that the drill has not struck the main ore body, but that it simply penetrated into the crevice forming the Mike Fault. He believes that the ore when reached by the shaft will be found to be standing more nearly vertical than horizontal. Mr. Boehmer believes that the main vein is 300 ft. deeper than is figured on by the owner of the Rex. However, there are other mining engineers who differ with Mr. Boehmer and are of the belief that the shaft will encounter the main ore body where it was met by the drill.

Wolftone.—The lessees are shipping considerable sulphide ore. The main shaft is being sunk 60 ft., which will make it a total depth of over 900 ft.

La Plata County.

(From Our Special Correspondent.)

Big Four.—This mine in Heffernan gulch promises to come to the front as a producer this season. After cross-cutting for 70 ft. a vein 10 in. wide of good smelting ore was struck. Drifting has shown the vein to be nearly uniform in size.

Columbus.—The former owners of this property are likely to encounter a great deal of trouble caused by their neglect to inform the parties to whom they last year bonded the mine of existing complicating claims. They rather represented and sold the claim as being entirely free from all possible conflicts, and now, when other and older properties crossing their claim have applied for United States patent, they find themselves between two two fires—suit is to be tried in the District Court on the 27th inst. The question is, if one man owns two claims overlapping each other, and he sells the latest of the two, he conveys the right of way through his older location, without mention being made of the fact in the instrument. In the meantime, the first and oldest location was also sold to parties, who now hold that they have right of the surface ground, etc., in accordance with the statutes regarding priority of location and apply for patent for the full claim.

Hibernia.—This old property on Ligthwer Creek on which little work has been done for several years will, it is reported, begin operations on a larger scale this year, and it is likely that a mill will be erected to treat the output.

Lewis.—This mill is reported rented to Pert & Thraschler, who will remodel it and put in machinery for a new process claimed to be especially adopted to the refractory low grade ores of La Plata. Work will commence as soon as the snow will permit the hauling of machinery.

San Juan and Standard Smelters.—These smelters are suffering from lack of ore. The former running one of six stacks, and of the latter two furnaces are idle.

Mineral County.

Commodore Tunnel.—The Commodore tunnel, located between the New York and Chance and Bachelor on Bachelor Mountain, owned principally by A. E. Reynolds, will resume operations with a good force of men at once. The vein was cut at a depth of 350 ft. and the first work will be drifting on the lead. Mr. D. G. Miller, mining engineer of Denver, has been appointed manager. The location of the Commodore tunnel, adjoining two of the most famous mines in the district, would seem to promise that the ore is high grade, and it is generally believed that an intervening ore chute will be opened up in a few feet of work.

Creede.—The output of Creede camp for the past month will average 15 cars per day.

Kentucky Belle Extension Mining Company.—The president of this company, who has for the past three weeks been arranging the financial matters of the company so as to pay off the men, has completed all arrangements and work will be resumed with a full force of men. The mine recently shipped a car of high grade ore and enough money was received from its sale to pay off all the men and start work again. The mine closed down about a month ago.

Solomon.—Harry Allenby, lessee on the Solomon, reports the tunnel is now in 30 ft. on the vein with a

2½-ft. pay streak. A shipment will be made in the near future. The ore carries from 15 to 60% lead and is increasing in value. Mr. Allenby is negotiating with Leadville parties to secure the erection of a mill at the mine. It is said that the pay streak is 5 ft. wide 300 ft. from where Mr. Allenby is now working. A shaft has been sunk to cut the vein at a great depth.

Ouray County.

Osborne-Leader.—This smelter, at Ouray, has started up with a force of 10 men, and about 150 tons of ore, says the Ouray "Silverite-Plaindealer."

Red Mountain District.—The Genessee-Vanderbilt and Guston are in active operation in the Red Mountain district, and as soon as the Silverton Railroad opens up again shipments will continue at a lively rate. The National Belle will reopen in the spring.

Virginius.—This property has been increasing its force of late. The enlargement of the new mill, which is already one of the best in the State, means that all danger of that great producer shutting down is past.

San Juan County.

Coming Wonder.—This property, located on Anvil Mountain, and overlooking Silverton on the west, is developing fast under the lessees. Eighty tons of average good ore have been taken from the mine this winter by 3 men, the ore running 28 oz. silver, 4·5 oz. gold and 6% copper per ton in carload lots, says the Durango "Herald." Drifts run in from the face of the mountain on the lead. There is a 4 ft. vein and 15 in. of pay mineral, continuous in each drift. There is 350 ft. of drifting on the vein. A lower drift will be started to run through the mountain this spring.

Mystery Wonder.—The Wyman tunnel, near by, is being driven in day and night. It has crosscut several veins and is running for the Mystery Wonder. The value of the ore discovered is not reported.

North Star.—This mine, on Sultan Mountain, is working but 40 men this winter, owing to the price of silver, but is taking out the usual quantity of good ore per man. Work has not been stopped on this mine for many years. The same may be said of the North Star on Solomon Mountain, where but 15 men have been working during the past winter. The ore from this mine is worked by the Crooke process.

San Miguel County.

Japan.—The ore body encountered in the lower workings of this mine is larger and better than the one in the upper level. Drifting on the vein is going on.

Silver Pick.—This mine is employing a fair-sized force, and are taking out some good concentrating ore. Shipments from that property have been greatly retarded during the last three months on account of the lack of water for running the full capacity at the mill. The ore from this property has to be milled before it is shipped. As soon as there is a sufficient quantity of water to run all the stamps a larger force will be put on.

Smuggler-Union Mining Company.—The Smuggler mine is producing the usual amount of mineral, which is being taken out through the Bullion tunnel instead of on the surface, as has been the case ever since the mine's location.

Tom Boy.—At this mine manager Lloyd has a force drifting on the vein in ore which runs $10 or better per ton, and sends weekly consignments of gold to the mint in Denver, says the Telluride "Journal." Last week the mine was credited with 214 oz. of gold, and the mill was closed down the latter part of the week. The water supply for the mill is very short and will be for perhaps two months yet.

CONNECTICUT.

Middlesex County.

The quarrymen of Portland have decided to stand by their demands for $2.25 per day. The quarry owners decline to give over $1.90, and one of them says that the men must accept these terms or they will advertise for help.

KANSAS.

Cherokee County.

(From Our Special Correspondent.)

Galena.—This old and prosperous district is enjoying unusual prosperity. Never in the history of the camp has there been so much development on new land as at the present time. Mr. Oliver Matthews and others, of Chicago, secured a lease of 80 acres of the old Bonanza land, and have spent several months in development and exploration work. After opening up good deposits of ore they built an ore-dressing plant, which made its first run last week, and cleaned up 25 tons of concentrates. Mr. Matthews is an old Colorado mine operator, who located in this district last spring.

LOUISIANA.

A press dispatch dated March 26, from New Iberia, says that an important discovery of rock salt has been made on Orange, or Jefferson Island, which lies on the southwest coast of Louisiana, not far from Petit Anse, or Avery's Island. Orange Island is owned by Joseph Jefferson, the veteran actor, who long has been of the opinion that salt existed on his property, as the island is similar in formation to Avery's. He had a shaft sunk 500 ft. without success. Another shaft was sunk in a different locality, and at 250 ft. rock salt was struck. The drill was sent down to the depth of 400 ft. without going through the bed of pure rock salt.

MICHIGAN.

Copper.

Osceola Mining Company.—The new No. 6 shaft, work on which has recently been started, the shaft now being about 18 ft. deep, is situated 1,050 ft. south of No. 5 shaft, says the Houghton "Gazette." The 19th level drift south of No. 5 shaft is in 800 ft. and in good ground. This drift will therefore have to be driven only 250 ft. to bring it under the new shaft. The 21st level drift is in 700 ft., leaving but 350 ft. to bring it under the new shaft. This latter drift is also in good ground. The mine is looking well in the present openings.

MINNESOTA.

(From Our Special Correspondent.)

Merritt vs. Rockefeller.—The suit of Alfred Merritt against J. D. Rockefeller, which comes up for trial in the spring, will be watched with the deepest interest by mining men in Minnesota. It is for $1,250,000, and if the plaintiffs win there is good ground for the expectation that they will regain control of the Duluth, Mesabi & Northern road. The result of preceding suits by the Merritts against Rockefeller and the Lake Superior Consolidated Company would not, however, tend to give confidence in the ability of anyone's succeeding in overturning the Rockefeller deals in connection with the Mesabi.

It is expected that some large sales of Minnesota ore will be announced in the coming week or two, and at prices advanced from those of a year ago.

Iron—Mesabi Range.

(From Our Special Correspondent.)

Auburn.—This company has added two 6-ton skips and has put in a second raise, and is raising a large stock pile from the developments under way.

Drake Stratton Company.—This company has put its men at work on the Lone Jack and Ohio preparatory to getting these properties in shape for shipping. The Lone Jack is to put out several hundred thousand tons.

Fayal.—This mine has placed its machinery plant, and will be developed at once.

Sauntry.—Work on the Sauntry property, in the north part of 58-16, is to be developed considerably at once, and may be made a shipper later on this season.

Iron—Vermilion Range.

(From Our Special Correspondent.)

Minnesota Iron Company.—This company has over 250,000 tons of crushed ore at its Soudan shafts.

St. Louis County.

(From Our Special Correspondent.)

George Hillyer, of Duluth, has a force of men developing a property on Bad Vermilion Lake, and has a vein 4 ft. wide.

Lucky Coon.—The new five-stamp mill on this property is now at work. The mine has two shafts, one twenty and the other 50 ft. down, and some drifting has been done. This is the second mill to get to work in the region.

Rainy Lake Region.—W. B. Pelton and G. L. Potts, of Appleton, Wis., and J. MacIntyre and A. J. Thibodo, of Niagara Falls, who bought, for $115,000, the Kelley-Moshier, Bartley-Wilson and eight tracks, of 40 acres each, in the Seine River section, as announced last week, are intending to do consideroble development at once, and will put in no machinery for sometime, probably not before next year.

Scott Island.—Capt. Jay Pratt, of the Scott Island Mine, Seine River, has given a 60 days' option on the property for $15,000 to some St. Paul operators.

Seine Bay Land Company.—J. F. and J. C. Foley, of the Wiegand Company, V. D. Cliff, F. W. Sullivan and others, all of Duluth, have organized the Seine Bay Land Company, and have secured thirty-eight 40-acre locations on that stream. The land is at the mouth of Seine River and will be developed.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

JOPLIN, March 25.

Last week was a fairly prosperous one in the zinc and lead mining industry of this district. Prices of zinc ore remained unchanged from the previous week, the highest price being $18 per ton. At this price there is a surplus stock rapidly accumulating in the hands of the operators. Lead ore remained firm at $15.75@$16 per thousand. New development is occurring almost every day, the latest being on the Moore farm, near Cane Springs, close to the state line. Following are the sales and shipments of ore for the week: Joplin, 1,319,600 lbs. of zinc ore and 396,230 lead, value $18,306; Webb City, 709,470 lbs. of zinc ore, 91,000 lead, value $7,491; Carterville, 1,428,060 lbs. of zinc ore and 110,720 lead, value $13,-953; Oronogo, 26,540 lbs. of zinc ore and 61,060 lead, value $1,206; Galena, Kan., 1,300,000 lbs. of zinc ore and 220,000 lead, value $13,340; Districts, value $54,-296; Alba, 88,000 lbs. of zinc ore, value $840; Aurora, 756,000 lbs. of zinc ore and 115,000 lead, value $6,586; Springfield, 44,000 lbs. of zinc ore, value $190; zinc and lead belts, total value, $61,912.

Newton County.

(From Our Special Correspondent.)

Wentworth.—A late report from this new and prosperous camp says that the Gobbler mine and mill are again running full time and producing high-grade zinc concentrates at the rate of 20 tons per day, which is being put into the ore bins, and at the close of the week they had over 300,000 lbs. of ore on hand. Several other mines are making preparations to pump the water out of their shafts and resume operations.

MONTANA.

Silver Bow County.

Alice Gold and Silver Mining Company.—In his annual report, President James P. Walker says: "I have the unpleasant duty to announce that the company practically made no money. In the annual report of 1893 I entered into detail in explaining and giving reasons why this silver mining company could not make any dividends. Conditions have remained unchanged, excepting that fine silver has depreciated from the average annual price of 1893, at which this company's silver was sold, viz.: 68¾c. per fine ounce. The average price at which the company sold their fine silver in 1894 was 62-64c. per fine ounce. This was 6·11c. per ounce less than the sales for 1893. The total indebtedness on January 1st, 1894, was $19,508, and on January 1st, 1895, $19,035, showing a gain for the year of $473.

The secretary, Mr. L. H. Farnsworth, reports additional receipts above bullion of $2,734.25 from the sale of town lots. Among the disbursements is $2,314 for permanent improvements, ore extraction and reduction, $116,616; expense account and taxes, $26,333.93. The total receipts were $22,770.47.

The superintendent reports that, up to December 1st, 30 stamps of the 60-stamp mill were used, and after that 10 more were required, owing to increase of leasers and greater amount of work done by day miners. The men employed were 63 tributers, or leasers, 78 in the mine force, 25 men in the mill, and 13 men on the surface. The water is kept pumped from the 1,000-ft. level, to which point it has risen from the 1,500-ft. level The quantity for some months past appears to be quite regular, showing neither increase or decrease. Two timbermen are kept regularly employed. Castings and machinery of the value of $4,530 and supplies valued at $27,716 are on hand.

Montana Mining, Loan and Investment Company.—A press dispatch from Butte says that Henry L. Haupt, president of this company, is on trial in the United States Court at that place on a charge of sending non-mailable matter through the post office. The company claims a paid up capital stock of $12,000,-000, and its stock is valued at $120 a share. It was organized in January, 1892, and has been doing an extensive business since. On the representation, so the government's witnesses said, that he intended to organize a legitimate mining company, Haupt induced John E. Richards, present Governor of the State; ex-County Treasurer H. C. Kessler, P. A. Largey, H. G. Valiton, M. L. Holland and C. J. Stevenson, all prominent mining men, to join. With the names of these incorporators he then went to the banks and secured permission to use their names as references. It is alleged that a dozen worthless mining claims were located by him, and deeded to the company in consideration of $100 in cash and the entire capital stock. He then sent out circulars all over the world advertising the property as highly developed and valuable, and sold the stock on a monthly instalment plan, issuing certificates at $1 each. The testimony at the trial is reported by the papers to show that Haupt was the sole manager of the concern and reaped all the profits. The entire property of the company is said to be worth not more than $2,000, and its mines, which are near Butte, to be worthless.

NEVADA.

Churchill County.

National Nickel Company.—A carload of machinery for this company has arrived at Lovelock and will be at once taken to the mines. According to our exchanges a smelter is to be erected in the spring.

Storey County—Comstock Lode.

Chollar Mining Company.—At the annual meeting of this company, held in San Francisco, on March 20th, 98,822 shares were represented, and the following officers elected to serve for the ensuing year: A. K. P. Harmon, president; Thomas Cole, vice-president, and Thomas Anderson, D. C. Bates and E. P. Barrett, directors. Charles E. Elliot was re-elected secretary, and his statement showed a credit balance of $7,157.82. H. M. Gorham was re-elected superintendent, and his report showed that the company made $800 over all expenses during the past month. In his annual report Mr. Gorham, referring to the new development of ore on and below the 450 level of that mine, says: It may be a matter of interest for me to mention how easy it is to miss a bunch of ore, or even a comparatively extensive body. There had previously been run on the 550-ft. level two east crosscuts, one on our north line and one 100-ft. south of it. And the ore followed by the winze came to the level immediately between those crosscuts, with scarcely a sign of its existence in either of them. The ore existing between the 450-ft. and the 550-ft. levels at this point has been partially extracted and milled, and we are still engaged upon it, the yield being in the neighborhood of 35 tons per day. The chimney is short, extending not more than 30 to 35 ft. either way from the winze, but has widened in places to 12 and 14 ft., the grade remaining about the same. The iron in the ore has oxidized, and the resulting red color permeating the waste as well as the pay makes the ore difficult to judge with the eye, and

necessitates both experience and care in the handling. Where the pay reached the 550-ft. level the grade was low and the quartz was greatly mixed with porphyry, but we concluded to trace it downward and therefore contined the winze toward the 650-ft. level. There was a manifest inclination in the vein to turn off with a dip to the east soon after leaving the 550-ft. level, so that when the winze had attained a depth of 50 ft. the pay had gone off to the east of it. To ascertain its position and to arrive at the knowledge as to whether it were better to continue the winze or not, an east crosscut was run from the bottom, 10 ft. in quartz all the way, poorer in quality compared with that found above the 550-ft. level, but high enough in my opinion to pay for extraction under favorable conditions. The winze was then continued with an augmented eastern pitch for a total distance of 58 ft. At this point it entered old ground, which, upon referring to the old maps, I find to be an east crosscut run in early days. The drift was caved and full of water, and as handling it with a windlass and bucket was slow and expensive the sinking was stopped. The striking of the old drift interferes somewhat with the probability of the ore extending downward. We can only hope that if the old work discovered anything it was too low in grade, with the prevailing range of prices, to be handled at that time—an hypothesis quite within the range of possibilities. Upon the cessation of work in the winze we commenced clearing out and repairing the shaft station on the 650 level. We have completed now 250 ft. of the north drift, leaving some 350 ft. to finish to reach the point under the winze from the 350 level. It is the intention to carry this work on with the greatest possible dispatch, and when completed to put up a raise and connect with the bottom of the winze. This will afford an economical means of both extracting the ore known to exist there as indicated by the winze and of further exploring the ground in that vicinity on the 650 ft. level. From the various openings in the mine during the year we have extracted 4,125 tons and 1,600 lbs. of ore, yielding bullion valued at $93 522, from which coin returns of $57,932 were received, or showing a discount of $38,590, due in a measure to the low percentage of gold contained in the ore, but attributed mainly to the low price of silver.

Following are extracts from the latest official weekly letters from the mine superintendents:

Belcher.—The weekly yield was 35 tons of ore, the car sample assays of which was $17.26 per ton. Seg. Belcher yielded 8 tons of fair-grade ore.

Consolidated California & Virginia.—On the sixth floor in the new ore body, the second floor below the sill floor of the 1,650 level, the east crosscut started at a point 125 ft. south of the vertical winze, which connects with the 1 600 level, has been extended to a total length of 65 ft., passing through a quartz formation assaying $10 per ton, and reaching the old stope timbers. At a point in the south drift on this floor, 85 ft. south from the vertical winze, a west crosscut was started and has been run 20 ft. through low grade quartz to the west or foot wall. On the ninth floor the drift running south from the south end of the stope has been advanced to a total length of 99 ft., its face being in porphyry. On the twelfth floor the east crosscut has been extended to a total length of 70 ft., with its face in porphyry and low grade quartz. From this east crosscut to a point 18 ft. in from its mouth, two drifts have been run, one to the north in low-grade quartz 12 ft., and the other to the south 9 ft. in a formation carrying narrow streaks of ore, which give an average assay value of $22.70 per ton. An opening has been made from the thirteenth floor up to the fourteenth floor 0 ft. long and 6 ft. wide, through low-grade quartz, porphyry and some clay. The stope started from the south drift, from the east crosscut, from the main north lateral drift, on the sill floor of this level, at a point 20 ft. from its mouth, has been carried up to a total height of 22 ft. This opening is 10 ft. long and 6 ft. wide, through ore 6 ft. in width, lying against the west wall, and carrying on the average an assay value of $60 per ton. In the 1,750 level, from the end of the drift running south from the south end of the stope on the fourth floor two crosscuts have been run, one to the east 15 ft. through porphyry and quartz of low assay value, and the other to the west 9 ft. through low-grade quartz to the west wall. A small portion of the ore extracted during the week came from the 13th floor above mentioned, and the remainder from the opening made from the south drift from the east crosscut on the sill floor of the 1,650 level, amounting to 52 tons, which assayed per car sample $46.92 per ton.

Crown Point.—The yield of the mine for the week was 641 tons of ore, which was shipped to the Mexican mill. The average battery sample assay was $9 86 per ton, of which $8.73 was gold.

Hale & Norcross.—A west crosscut was started near the north boundary line on the 975-ft. level and advanced 12 ft. The face is in porphyry and quartz. The south drift from west crosscut No. 1 on this level was extended 8 ft. to a length of 76 ft., and the face shows a narrow streak of fair-grade ore. On the intermediate level we have stopped work in the north drift and advanced the south drift to a length of 31 ft. In it are porphyry and stringers of quartz. We extracted during the week eight carloads of ore, averaging $29 68 per ton.

Justice.—We extracted about 20 tons of fair-grade ore from the stopes above the drain tunnel, and shipped from the ore dump 45 tons of ore to the Taylor mill for reduction.

Occidental.—The north drift from the west crosscut, 500 level, is now in 38 ft., and continues in ore of the average assay value of $40 per ton. The west crosscut of the 550 level has been cleaned out and extended a total distance of 70 ft. face in hard porphyry.

Savage.—On the 950-ft. level the south drift started from the face of the sill floor southeast drift is advanced a total distance of 30 ft., following a stratum of fair-grade ore. From the 1,000-ft. level we continue to extract some fair grade ore from the stope upward to the 950-ft. level. On the 1,050-ft. level the upraise from the face of the south drift is up 22 ft., being advanced 10 ft. since last report; top is in low-grade ore. The west crosscut started from the face of the south drift is yielding fair-grade ore. During the week we hoisted 100 cars of ore. Car samples average $24.47 per ton. Shipped to the Nevada mill 112½ tons and milled 140 tons; average battery assay of same, $19.86. Bullion yield for the week, $1,946.28.

West Consolidated Virginia & California.—The west crosscut run from a point 320 ft. north of the 1,100 level station is now in a total distance of 1,462 ft. The face is in porphyry of a favorable character. The flow of water and temperature are about the same as last reported.

NEW MEXICO.

Grant County.

Alabama.—This mine has been bonded to Messrs. Vail and Shockley, of Pueblo and Denver. The bond has 18 months to run, and provides for a payment of $30,000. Until the bond is paid the owners receive 25% of the net proceeds of the mine. Vail & Shockley intend to put on a hoist and other necessary machinery and exploit the property thoroughly, says the Lordsburg "Liberal." They will ship the ore to their smelters, being interested in smelters at both Pueblo and Denver. The Alabama mine has a shaft 168 ft. deep, and through the entire length of the shaft and at the bottom there are from 3 to 4 ft. of ore that average 1 oz. in gold and 20 oz. in silver. There has been considerable high grade ore taken from the mine.

Pacific.—Spiller and McLain, who have a lease upon the Pacific mine and mill are pushing work. They have made a steady run night and day with the mill since February 19th, and expect to make a shipment soon. They have 20 men taking out ore from the third level of the mine, which is down to a depth of a little over 400 ft. Owing to the litigation which has been hanging over this property, the second and third levels of the mines were allowed to fill with water, and the expense in opening up was considerable. It was also found necessary to do a great deal of retimbering in order to make the workings safe. Six men are employed in the mill and five teams are kept busy hauling ore.

PENNSYLVANIA.

Anthracite Coal.

The Diamond Washery, situated about a mile east of Shamokin, was started up last week. Close by is the large culm bank of the Lambert colliery, which having accumulated in the days when the smallest sizes of coal were not yet marketable, is abundant in pea and rice, says the Mt. Carmel "Ledger." The Luke Fiddler banks which are but a short distance off, will also be run through the washery.

Black Diamond.—The extensive improvements at the Black Diamond colliery which have been under way for several weeks are well nigh completed. The new hoisting plane has been put into operation.

Continental.—This is near Centralia and owned by the Lehigh Valley Coal Company, is shortly to resume operations, says the Mt. Carmel "Ledger." The colliery at one time was a profitable one, but for the last eight or ten years it has been idle, the expense required to operate it after the coal had to be hauled considerable distance underground compelling its abandonment. Large quanties of timber are now being hauled to the mine for opening up such parts of the interior as may have fallen in through decay. The colliery employed over 300 hands when working and its resumption will be a big boom to Centralia.

Hickory Swamp. — This colliery, between Mt. Carmel and Shamokin, will start up again on May 1st. About 500 men and boys will be employed. The colliery has been idle since last fall.

Luke Fiddler.—The work of pumping the water out of the Luke Fiddler mines is progressing rapidly, and the water is going down at the rate of 18 in. per day.

Pennsylvania Coal Company.—An interesting experiment has been made by this company at its No. 3 colliery, near Mt. Carmel, in which a fire broke out 20 months ago. The fire at the time it originated swept through the gangways and breasts and gained such headway that the ordinary methods for fighting outbreaks of this kind were found useless. It was then decided to endeavor to smother the flames, and for that purpose the gangways were allowed to collapse. Every fissure and crack visible was sealed up, and all openings made as air-tight as possible. During the past year little or no evidence of the fire was found, and the officials believe that the fire has been extinguished. The mine will now be reopened, and the result of the smothering process will then be made known. Despite the claims of the officials, however, there are many who believe that the fire is still smouldering and the result of the test will be watched with interest.

Primrose.—This colliery, east of Delano, owned by the Delano Land Company, will shortly resume operations, after having been idle nearly a year. The colliery will give employment to 400 men and boys.

Sixth Anthracite District.—Mine Inspector William Stein, of the sixth anthracite mining district, has just completed his annual report for 1894. The statistics show that the district produced 6,333,381 tons of coal last year, of which amount 451,081 tons were consumed at the collieries for steaming purposes, and the remainder, 5,888,300 tons, shipped to market. The total number of men and boys employed in and around the mines of the district was 20,109, of whom 11,227 were employed underground and 8,882 outside. The fatal accidents for the year numbered 73, and the non-fatal 94 and the trifling, 42. The explosives consumed in the mines of the district, for the year were: Dynamite, 323,148 lbs., black powder, 154,402 kegs, or 3,860,050 lbs.

Bituminous Coal.

The convention of United Mine Workers of America, District No. 2, was held at Dubois on March 27th. Delegates were present from Dubois, Walston, Adrain, Eleanora, Helvetta, Reynoldsville, Rathmel, Beech Tree, Coal Glen, Dagus and Crenshaw, representing miners of Bell, Lewis & Yates, the Rochester & Pittsburg Coal and Iron Company, Berwind & White Coal Mining Company, and the Northwestern Coal Mining Company, a total of 15,000 miners. The meeting was called to consider the question of making a demand for an advance of 10c. on high coal and a proportionate advance on low coal, in accordance with the scale demanded in the Pittsburg region. The proposition to the operators will not be made public until after it has been submitted to them. The convention adjourned to meet on April 8th to consider the reply of the operators. If the latter is not favorable a strike may take place as early as April 15th.

Pittsburg Railroad Coal Operators.—With about 5,000 railroad miners in the Pittsburg district still idle, as the result of the strike declared three weeks ago for higher wages, the Pittsburg Railroad Coal Operators' Association met on March 26th. Resolutions were adopted that the strikers be offered 60c. per ton, or an advance of 5c. over the price that had been paid by the operators. The resolutions contained the important clause, however, that all miners accepting the rate be required to sign an ironclad agreement such as is in vogue at many mines in the district. The agreement will require the diggers to work one year for 60c. and will also require them to leave 10% of their earnings with the operators as a guarantee that the contract will be carried out. Interest will be paid on the 10% held back and it is to be paid the miners when the year expires.

Notices will be posted at all the mines controlled by the Operators' Association, announcing that the new rate will go into effect April 1st. The operators are willing to contract at 60c. for a whole year, because they fear another national suspension this year. The secrecy of the miners with regard to their future movements has alarmed the operators. It seems probable that some of the miners will accept the rate offered, although they will not do so with the consent of their officials.

The miners of J. H. Somers, at Belle Vernon, returned to work on March 26th at the 60c. rate. The operators say that is the highest they can go, owing to competition by Ohio operators, who sell their coal at low figures to lake shippers.

According to the operators, no conference will be held as a result of the action taken at their meeting The operators now, having a solid organization, propose to deal with their men individually. The miners' officials are busy organizing in all parts of the district, and the river miners at work are contributing several hundred dollars weekly to the support of the striking railroad men. The 60c. scale was reported to the operators' meeting by the association's scale committee, and the motion to adopt it was made by Operator Henry Floersheim. There was a heated discussion and a dozen operators opposed 60c. When the matter was put to a vote only one operator went against the proposition, he being R. H. Boyle, a member of the wage committee.

Several river operators who have railroad mines attended the meeting and announced the majority of river mines would be closed April 1, when the boats and barges are loaded. The river operators are paying 69c., and at this price are able to ship coal only to St. Louis and intermediate points, places along the Ohio River being supplied more cheaply by Ohio mines. Should the miners refuse to work for 60c., and it is probable they will in great part, the operators will allow their mines to lie idle until the lake season opens, with the probability of starting with new men.

The Monongahela River operators of the fourth pool met on March 26th and perfected an organization to regulate prices and wages.

Railroad Miners' Union.—Officials of the Miners' Union announced on March 27th that the offer of the railroad operators, to pay 60c. a ton for one year from April 1st, would not be accepted. Cameron Miller, vice-president of the National Union, said: "When April 1st arrives I don't think there will be a resumption of work at 60c. a ton. On the contrary, it appears as though the suspension will be

come more general for the reason that all companies now paying 69c. have pledged themselves to run their mines on and after April 1st at 60c. Failing in this, the supposition is that they will allow their mines to remain idle."

SOUTH DAKOTA.

Lawrence County.

Yankee Boy Group.—A pipe vein has been discovered on the Magna Charta lode, in the Carbonate camp. The vein cropped out of the surface some 10 ft. and development work showed up both walls of shale and trachyte, says the Deadwood "Pioneer." The vein is vertical, and, as far as work is done, is about 12 ft. in length and 6 ft. wide. On this claim the owners have a tunnel 200 ft. long, which is crosscutting the formation, and several stringers of ore have been passed, varying from 1 to 4 ft. in thickness.

Pennington County.

Holy Terror.—Although but a five-stamp mill is being run on this property the average weekly output is about $10,000, says the Rapid "Journal." A new hoist and other new machinery is now on the road. The work until that arrives will be drifting and stoping, which will furnish the mill all the ore it can crush. Development work continues to disclose a wider vein, but without any diminishing in the value of the ore. After going down 100 ft. deeper the owners intend to increase the working capacity of the mill by putting on additional stamps.

UTAH.

Juab County.

Bullion-Beck and Champion Mining Company.—The formal transfer of the Caroline mine to this company was effected March 22d at a straight-away price of $130,000.

Herkimer.—It is reported that ore has been struck in the Herkimer in a drift 1,000 ft. from the shaft, says the Eureka "Democrat." The ore carries ¼ oz. of gold.

Tintic District.—Shipments from the district last week were as follows: From the Bullion-Beck, 25 carloads; from the Centennial-Eureka, 3 carloads; from the Gemini, 4 carloads; from the Iron Mine daily shipments are 4 carloads.

Salt Lake County.

Old Jordan & Galena Mining Company.—Late reports from Bingham announce important strikes in the Old Jordan & Galena. A large body of ore has been opened up in Galena ground, assays from which show 75 to 130 oz. silver, 6-10 to 1½ oz. gold, and 35% lead. The ore body is 3 ft. thick and has been developed for a distance of 70 ft. on the strike of the vein.

Tooele County.

Gold Coin.—Smythe & Murphy have resumed work on the Gold Coin group, north of camp. They are in the vein and have started to drift thereon. Good assays have been obtained, but no body of pay ore as yet.

Hillside Mining Company.—On this property the incline has been equipped with a whip, and it will be continued on a steeper pitch until the ore body is again cut, after which it will be used entirely, for the present, at least, in the development of the mine, says the Mercur "Mercury." After uncovering the ore below the mouth of the incline, the manager went into the incline and sunk a shaft there down to and through the ore, from which good values have been obtained. The development of the property is being pushed as rapidly as possible, as the company desires to commence on the mill as soon as they have the property developed sufficiently to justify it.

Mercur Gold Mining and Milling Company.—An increase in the quantity of ore being treated at the new mill of this company has just been made, and nearly 160 tons are now going in at the crusher. The Mercur & Salt Lake railroad is working night and day and delivering 175 tons on the dump of the mill. The surplus is rapidly filling up the ore houses, there being now on hand in the neighborhood of 500 tons.

WEST VIRGINIA.

Wirt County.

A press dispatch from Parkersburg says that great excitement prevails in the town of Elizabeth over a big oil strike. The oil well of Mrs. W. T. Jackson, sunk on the Poor farm, struck the gordon sand at 2,600 ft., and in one hour there was over 600 ft. of oil in the well. The territory is entirely new, and the well is said to be the deepest in the State.

WISCONSIN.

La Crosse County.

Roden Quarry.—Thomas Roden, Edward Kirk and Alex. Bailey have formed a partnership in the quarrying business, at La Crosse. It is understood they will develop the quarry of reddish colored rock on the Roden property.

FOREIGN MINING NEWS.

AUSTRIA.

An explosion of fire-damp occurred in the Albrecht mine at Troppau, Austrian Silesia, on March 16th. Over 200 men were at work at the time and it is feared that one-half have perished.

BRITISH COLUMBIA.

Blue Bell.—Thirty-five men are at work on this mine, which is shipping 150 tons a day to the smelter at Pilot Bay.

Little Phil and Black Diamond.—These claims are making a good show. Seven men are working on the joint properties, which have sent out 255 tons to the smelter at Great Falls, Mont., since the beginning of the year. The smelter returns gave the high return of 700 oz. to the ton for some picked ore.

No. 1 Mine.—At the No 1, 15 tons a day are being put through the concentrator at Ainsworth, says the Nelson "Miner," which is running day and night. The mine and concentrator are employing about 30 men. Since January 1,200 tons of ore have been shipped from this mine to the smelter at Pilot Bay.

Rand.—Work has been commenced on the Rand and on the Indicator, a northwest extension of the No. 1. In June the "Mile Point" will be up again. Ore from this latter property has assayed as high as 400 oz. to the ton, with 10% of lead.

MEXICO.

A press despatch from the City of Mexico says that the Federal Government has approved the concession granted to a syndicate of American capitalists, of which George M. Pullman is a prominent stockholder, for the construction of a railroad from the coal fields of Bororteran to Nuevo, Laredo, and thence along the Rio Grande border to Matamoras, and from there down the Gulf Coast to the Port of Tampico. The line is subsidized by the Federal Government for a distance of 350 kilometers.

Chiapas.

Chiapas Mining Company, Limited.—The report of this company for the year ending September 30th, states that 15,318 tons of ore were milled, of an average assay value per ton of 15 dwts. 2 grs. gold, 7 ozs. 15 dwts. silver, and 4·34% of copper. They produced 709 tons of concentrates, at a cost of of £25,377, and which realized £31,695, being an average of £44 12s.11d. per ton. The result, inclusive of the store account, was a net profit of £7,139. There was expended upon capital account £6,265 in payment for the additional plant and machinery required for the development of the mine, and to treat the large accumulation of about 17,000 tons of tailings, the assays of which averaged 6 dwts. of gold, 4 ozs. of silver per ton, and 2% of copper. The additional water provided by the new plant will, the manager anticipates, largely increase the motive power at the mill, and will have the effect of overcoming the evil of the want of power during the dry season, which, in the period under review, caused a stoppage of the mill for some six weeks, and a loss in value of output of about £4,500. After long negotiation an agreement has been made with the owners of the land by which the company obtains on reasonable terms the right to utilize water in the creeks above and below the mill down to the Teapa river, as well as the right to use the timber and building stone and material on the lands surrounding the mine and extending over a large area. The total number of feet driven in the mine was about the same as in the previous year, but the sinking and upraising were more than doubled, and a large amount of overburden was removed from the flat lode in the Providencia. The cost of transporting the concentrates to Europe forms one of the heaviest charges, and the directors have succeeded in arranging a new contract with Senor Arciga, the transport contractor, by which some reduction in rates for the freights over the road has been made. The manager reports that, on account of the precipitous nature of the ground, there is no room for storing more of the tailings which have now to be run to waste. Should the result of the working of the present 10-stamp mill justify it, the directors propose to add to the present number of stamps, so as to increase the tailings machinery with a view to minimize this loss.

Chihuahua.

Batopilas Mining Company.—Mr. A. R. Shepard in a recent letter from Batopilas says: A combination of the labor of 10 years and the completion of the mill and the water power encourages the belief that Batopilas will soon become a dividend-paying property. Our construction account amounts to about $2,500,000, all of which has been taken out of the mines. The product will be about $1 200 a day of 24 hours, with loss in tailings of 7% to 9% in the mill.

NOVA SCOTIA.

(From Our Special Correspondent.)

Mining in this province presents few points of interest just now. At Springhill a strike has begun owing to the driver boys demanding that their work be diminished to correspond with the reduced time worked by the men since the fire last December. In Pictou County work continues very quiet, the resumption of smelting at Londonderry giving a slight increased demand for slack coal. The new bank head at the Acadia Colliery will be finished shortly and work resumed. In Cape Breton the new pier of the Dominion Coal Company, at Louisburg, is expected to be ready for shipment in May. The various improvements at the collieries of this company are nearing completion. At present the accumulation of stocks of coal by this company has been in great measure discontinued. The General Mining Association has put its railway and pier at North Sydney in order, has a large bank of coal at the pit head, and expect to sell over 250,000 tons this year.

The Londonderry iron furnace has started again and is said to be giving satisfaction. The amalgamation of the New Glasgow Iron Company and the Nova Scotia Steel Company, it is expected, will be shortly consummated, although vigorously opposed by some of the shareholders before the local legislature.

In gold mining there is little to report. Preparations are making for spring work at a number of mines. Among these may be mentioned the Saunders, the Rawdon and Umacke. The usual returns continue to be received from the Country Harbor mines. The Richardson is giving promise of a long life as a steady, if rather low grade, mine, and succeeds the Dufferin as the eastern banner mine. The heavy snow has prevented the usual winter prospecting.

ONTARIO.

Mr. Robert Bell, assistant director of the Geological Survey of Canada, has sent to the Toronto "Globe" the following interesting description of the anthracite deposits around Hudson Bay: In regard to anthracite, the first reference to its occurrence on Hudson Bay is the following, at page 325 of my report for 1875: "When at Moose Factory (in that year) Captain Taylor, of the Hudson Bay Company, presented me with several specimens of a mineral having all the (ordinary) characteristics of a very fine anthracite, except that it contains, according to Mr. Hoffmann's analysis, only a very trifling amount of ash. (Vide Mr. Hoffmann's report, analysis No. 4.) The specimens were obtained by an Indian from Long Island, south of Great Whale River. I was told by Mr. James L. Cotter, of the Hudson Bay Company, to whose intelligent observations I am indebted for much valuable information, that a similar mineral was reported as occurring some miles inland from Little Whale River. I could ascertain nothing in regard to its mode of occurrence further than that the Indian who brought the specimens from Long Island stated that there was plenty of it there. It appears to have resulted from the alteration of a mineral like albertite by losing nearly the whole of its bitumen."

Mr. Hoffmann says with reference to his analysis of the above specimens of anthracite: "The following is the mean of two very closely concordant analyses: Fixed carbon, 91·91; volatile combustible matter, 1·29; water, 3·45; ash, ·35; total, 100."

It is scarcely necessary to explain that ordinary bituminous coal occurs in the form of beds, layers or seams between and parallel with other strata, and that it has resulted from the mineralization of what were originally beds of peat. Ordinary anthracite occurs in similar beds, has had a similar origin, and contains about the same proportion of earthy matter or ash, as bituminous coal. Its deficiency in bitumen has resulted either from the driving away of the more volatile hydrocarbons from bituminous coal, or it may be due, as Professor Stevenson believes, to the peculiar conditions under which the original vegetable matter was laid down. Albertite, on the other hand, is found in the form of true veins cutting the stratification. It contains very little earthy matter, and has been found in the drying up and solidification of thickened petroleum, natural tar or pitch. It was mined for many years at Albert, in New Brunswick, and sent to Boston and New York for the manufacture of illuminating gas, for which it was eminently fitted, owing to its comparative freedom from sulphur and ash.

The rocks of the East Main coast are much older than the Carboniferous period, and there is little doubt that the anthracite of that region occurs in veins, like the albertite just referred to, and that it has had a similar origin, but it has undergone further change than the latter mineral. The anthracite of the East Main coast is further referred to in my report for 1877, page 24 C.: "It would appear that it occurs in the southern part of Long Island, which is over 30 miles in length, and that prospecting pits were sunk upon it by some explorers many years ago." It was stated in my report for 1875 that the Indians reported the occurrence of anthracite also in the interior of the country to the eastward of Whale River. This report has been confirmed by Mr. A. P. Low of this department, who in 1893, when exploring in the interior of Labrador, found a vein of this mineral about seven inches in thickness.

In my reports of 1871, 1875 and 1877 I mentioned the discovery of lignite on the Albany, Kenogami, Missinaibi, Abbittibi and the main Moose rivers. Within the last few years Mr. E. B. Barron, Stipendiary Magistrate, was engaged in boring through and otherwise exploiting these lignites on the Missinaibi River on behalf of the government of Ontario.

On page 21 of my report for 1877 the following statement is made in regard to ores of iron: "The spathic ironstone bands which have been shown to form the uppermost rocks (with the exception of the trap in the three northern islands) of the whole of the Nastapoka chain are found by Dr. Harrington to constitute valuable ores of iron. An average specimen of a compact variety from Flint Island he finds to contain 25·44% of metallic iron and upward of 24% of carbonate of manganese. A crystalline variety from Daveaie's Island gave 27·83% of metallic iron. These spathic ores form a band which would average not less than 20 ft. in thickness throughout the whole group of islands, which, as already stated, have a length of about 90 miles, exclusive of the more northern islands. . . . The enormous abundance of the ore is its great feature.

Forming the uppermost band on nearly all of these large islands, where the dip is so low, and the underlying strata confined to the cliffs along their eastern sides, the iron-stone beds are spread over the greater part of their area, which in the aggregate amounts to many thousands of acres. The islands being destitute of timber and the rocks much shattered by the frost, etc., the ore, ready broken, may be gathered up in inexhaustible quantities. The islands offer good shelter for vessels, and the ore might be conveniently loaded in many places." In comparison with hematite and magnetic ores, the above percentage of iron may appear low, but it is really high for this kind of ore, which is valuable from the facility with which it may be reduced. The greater part of the iron ores of Britain are of this class. The large percentage of manganese in these Hudson Bay ores renders them very valuable for the manufacture of spiegeleisen, used in making Bessemer steel. On the same page of the above report it is stated that "Along the landward side of Long Island for three miles from its southwestern extremity, highly ferruginous beds, varying from 10 to 50 ft. thick, some of which may be variable as ores of iron, are seen near the water's edge, overlying sandstones and shales and underlying compact trap. On the island, about one mile long and situated half a mile southwest of the southern extremity of Long Island, a ferruginous band is seen in a similar position, and another higher up, between two thick layers of trap."

The coal is almost free from shale bands, and it is the practice to mine everything and sort out the small proportion of shale at the belts. Here and there a few small patches of inferior coal have been met with, and these have been left untouched after determining their extent, but the extent so left is very insignificant and scarcely affects the theoretical calculations. In one particular the deposit differs markedly from European fields, and that is in the absence of cleavage lines. This has the effect of making the mining costs higher, for the coal appears as a solid and unbroken mass and no advantage can be taken of the usual natural divisions. The probable recent character of the deposit and the absence of any weight of superincumbent rocks and corresponding pressure, are doubtless the reasons for this absence of cleavage.

Dynamite is used throughout the property for explosive purposes. The drilling is all done by native miners, but Mr. Williams declares in favor of coal cutters, preferring the percussive type driven by compressed air, as being lighter and easily handled. The deposits appear to be eminently suited for the work of coal cutters, being thick and also free from nodules. The cheap labor of the native miner has assisted to prevent their adoption; but it is the question of initial cost which is the principal objection urged against them.

The progress of this company is an index of the progress of the gold industry for the larger proportion of the coal supply has been drawn from this mine. The figures are as follows:

Output to September 30th, 1890		33,759	tons.
" " "	1891	70,241	"
" " "	1892	161,273	"
" " "	1893	223,563	"
" " "	1894	263,945	"
" three months,	1894	75,968	"
" January,	1895	24,800	"
Total output to date		859,459	tons.

This is the quantity of clean coal, round and nut, produced; the proportion of waste has not been less than 20 per cent., and 25 per cent. of the total quantity developed is still in the pillars. The monthly tonnage is increasing and the output for this year will probably considerably exceed 300,000 tons.

The transmission of power scheme promises an extension of the company's operations, for if successful it will create a demand for the output on the spot, and the competition for the custom of the mines will affect this coal mine least of all. Arrangements have already been made to sink a shaft on the boundary, near the ground of the Cassel Company, and to open up a mine there should the demands of electricity require the output to be increased. The Cassel Company's mine is opened up to within a few yards of the boundary of the Brakpan property, and there is therefore no doubt that the latter contains the same quality of coal as the Cassel mine.

Rainy Lake District.

Hillier & Steel are putting in a 5-stamp mill, made by the Gates Iron Works, instead of by Fraser & Chalmers, as reported.

PERU.

Representatives of a syndicate formed to operate coal mines in Peru met the Peruvian Minister, Senor Jose Irigoyen at Philadelphia, Pa., March 11th, and consulted about the carrying out of a concession which the syndicate says it has from the Peruvian Government. Those present were H. H. Potter, of Philadelphia; G. T. Clinton Gardner, of Parkersburg, W. Va.; J. F. T. Anderson, of Richmand, Va.; W. Schafer, of Pottsville, and R. R. Matters, of New York. The mines are situated about 100 miles from the coast, and it is proposed to build a railroad to them.

SOUTH AFRICA.

Transvaal.

The "South African Mining Journal" says that the Rand Central Ore Reduction Company has entered into a contract with the Robinson G. M. Company to treat the latter's slimes for five years. A new plant is to be erected on the Robinson Company's ground in the neighborhood of the Ferreira mill, to which all the material will be transported from the slime pits on the other side of the creek. Roughly speaking, the amount of material which will be handled under the contract will be something like 500,000 tons. It is the first contract of its kind made on these fields. The effectual treatment of slimes is one of our most pressing problems, and its successful solution will mean a very important addition to the Rand output, with its corollary in the shape of enhanced dividends to individual companies. There are many companies on these fields to which the addition of one or two dwts. value to the ton crushed would mean an era of substantial dividends in place of the struggle to balance profit and loss the right way; and there are also many portions of our reefs which could be worked at a profit with such an additional extraction as a cheap and successful slime process would give. In fact, such a process would be an inestimable boon to the fields, and we therefore heartily wish success to the new departure.

It was at the Robinson that the first successful treatment of tailings on a large scale by cyanide solutions took place, four years ago; and in the latter part of the same year the company erected and worked the first successful chlorination plant on the fields. Now a contract has been entered into for the erection of the first slime plant on the fields. Its capacity will be something like 8,000 tons monthly. As to the details of the process, until success has been attained, Mr. Butters is very reticent on the point, but cyanide solutions will, of course, be used, and the Siemens and Halske process installed in the works.

LATE NEWS.

A press dispatch from Fulton, N. Y., says that a large flow of natural gas was found at that village on March 20th. At a depth of 1,645 ft. the drill penetrated the Trenton formation. Great excitement prevails in Fulton on account of the discovery.

Superintendent Lyman of the Consolidated California & Virginia Mining Company writes as follows from Virginia City, Nev., under date of March 23d. During the past week the output of ore was nearly twice as large as for the previous week, and the average assay of the same has increased nearly $10 per ton. The amount of ore extracted during the week was 96 tons, and the average assay of the mine car samples was $56.83 per ton, against $46.92 per ton for the week before. In the new ore body in the south drift from the east crosscut on the sill floor of the 1,650 ft. level the fourth floor of the stope is now being opened. Energetic prospecting work is being done at other points, and the mine generally is looking well.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Mar. 29.

Statement of shipments of anthracite coal (approximated) for week ending March 23d, 1895, compared with the corresponding period last year:

Regions:	Mar. 23, 1895. Tons.	Mar. 23, 1894. Tons.	Difference.
Wyoming region	390,332	291,267	Inc. 99,065
Lehigh region	122,615	91 167	Inc. 31,448
Schuylkill region	291,075	162,290	Inc. 128,785
Totals	804,022	544,724	Inc. 259,298
Total for year to date	8,910,239	7,083,489	Inc 1,826,750

PRODUCTION OF BITUMINOUS COAL, in tons of 2,240 lbs., for week ending March 23d and year from January 1st:

Shipped East and North:	1895. Week.	1895. Year.	1894. Year.
Phila. & Erie R. R.	2,411	20,606	13,167
Cumberland, Md.	61,977	567,380	674,695
Broad Top, Pa.	9,625	108,285	87,741
Clearfield, Pa.	94,044	901,910	781,794
Allegheny, Pa.	35,698	396 181	319 563
Beech Creek, Pa.	69,934	655,248	588,036
Pocahontas Flat Top	† ...	731,170	583,392
Kanawha, W. Va.	57,432	757,276	564,305
Totals	334,062	4,138,056	3,592,753

† Returns not received.

Shipped West:	1895. Week.	1895. Year.	1894. Year.
Pittsburg, Pa	38,351	453,599	303,812
Westmoreland, Pa.	43,705	456,257	335,212
Monongahela, Pa.	10,956	183,775	105,143
Totals	93,012	1,039,631	741,167
Grand totals	427,074	5,237,687	4,336,920

Production of coke on line of Pennsylvania Railroad for the week ending March 23d, 1895, and year from January 1st, in tons of 2,000 lbs: Week, 123,440 tons; year 1,358,313; to corresponding date in 1894, 765,365 tons.

Anthracite.

There has been little improvement in the anthracite coal market since our last report. The demand shows a slight increase this week, but, on the other hand, prices have not grown firmer. One or two sellers state that they have obtained more for their product than it was possible to do a fortnight ago, but the majority—companies, individuals and middlemen—frankly report that prices are as low as ever. Good stove coal may be bought in this market at from $3 to $3.15 on board. Broken, egg and chestnut are 10c. to 15c. less. As we stated in our last week's review of the trade, coal is selling at low prices in the Eastern market also. Some companies, by making their barge rate to Boston 50c. against—say, 80c.—for vessels, which must be paid by sellers who do not own barges, are selling at prices equivalent to $3 on board here.

Widespread interest attached to the meeting of the presidents of the coal transportation companies. The matter of transportation is, of course, the chief question just now. Once this is settled, production itself and prices can be easily settled. A fully attended meeting of presidents was held in this city on Thursday. The sub-committee of five had been at work for three days, but it naturally had no final report ready. The questions which confront the coal companies cannot be adjusted in a few hours. The presidents had a prolonged discussion, which, however, resulted in nothing definite being done. Previous to the meeting, a number of rumors were afloat principally as to what two or three of the smaller companies would do in case the bigger concerns tried to cut down their percentages of allotment. At the meeting itself we understand that the speeches which the presidents of the Delaware, Lackawanna & Western, and the New York, Susquehanna & Western, addressed to one another were listened to with much attention. After deliberating in a manner which showed all the interests to be desirous of reaching an amicable agreement, and also of being determined not to suffer any reduction from the allotments which they consider their just share, the presidents, we are informed, requested the sub-committee—the old "Salvation Committee" increased by two new saviors—to submit a schedule, such new percentages as the committee judge just and fair. In case neither the committee nor the presidents can agree on percentages, we are told that three arbitrators will be appointed who shall make the allotments, the presidents agreeing to abide by their decision. The "Salvation Committee" will report when it is ready to do so.

This shows that the various interests are desirous of averting the demoralization which threatens the trade. It also shows that this desire is not strong enough to induce the presidents to put an end to procrastination, for this endless and thus far fruitless appointment of committees to make reports, which are certain to cause further discussion and further delay, is nothing short of procrastination. It is a great many years since the coal trade was in so deplorable a condition as it is to-day, from a coal producer's point of view, and yet the indications are that it will be several weeks before any definite action is taken to prevent its further demoralization. The longer we remain as we are the more difficult it will be for sellers, when they do reach a decision, to convince buyers of the stability of the new order of things. Dealers will be slow to buy, in the belief that prices, which presumably will be advanced as soon as an *entente cordiale* is re-established among the companies, will not be maintained. And this backwardness in buying, in its turn, means for producers a temptation to "shade." And we do not think that during the past year the anthracite companies have exhibited marked force in resisting such a temptation.

A meeting of the sales agents was held in the office of the Pennsylvania Coal Company in this city on Friday. It was decided to restrict the production during April to 50% of last June's output, or 2,550,000 tons. Prices were very wisely left "unchanged." Everything now depends upon a speedy settlement by the presidents of the transportation problem.

Bituminous.

There is no change in the condition of affairs in this market. There is still considerable anxiety and suspense as to when through rates to Greenwich will be made by the Pennsylvania Railroad Company. From contracts which have bidden upon and from the general run of prices it would seem that operators expect some concessions from last year's rates, but no definite information has transpired. The official announcement may be made at any moment now.

The Baltimore & Ohio Railroad has announced its rates, which, considering the difference in sea freights between Baltimore and Philadelphia, would indicate that the Pennsylvania railroad has resolved to maintain last year's figures.

Considering the amount of orders on hand at the shipping ports, vessels are very scarce, especially the smaller craft, the great majority of which are still tied up in winter quarters. This is due to the continued cold weather, which, in addition, has this season caused a consumption of coal above the average. The fuel supplies at mills and manufacturing establishments are so low as to make the situation serious in some cases and call for immediate shipments. The orders now on hand are mainly from this source. Sea freights are from 10c.@15c. higher than they usually are at this time of the year.

Transportation from mines to tide is very good.

Prices on current business are practically last year's figures slightly shaded. We quote at the various ports: Norfolk and Newport News, $2@$2.20; Baltimore, $2@$2 25; Philadelphia, $1.90@$2 25; New York harbor shipping ports, $2.40@$2.75, all according to quality.

We understand that Clearfield coal is being offered at abnormally low figures, though it is impossible to ascertain just how low prices have gone. It would seem from certain features of this movement, that the Clearfield region is being powerfully backed in its struggle against the Pocahontas and New River coals. Pocohontas has been trying of late to get better prices, so that the disturbing element in the present situation is the Clearfield. Some large contracts for season supplies have been taken during the past week. The actual figures given are impos-

sible to ascertain in most cases. Such prices as are known are said by the trade to be remarkably low.

We quote ocean freight rates as follows from Philadelphia: To Boston, Salem and Portland, 95c.; Providence and New Bedford, 85c.; Wareham, $1.05; Lynn, $1.05@$1.15; Newburyport, $1.15; Portsmouth, $1; Dover, $1.25; Saco, $1.10; Bath, $1; Gardiner, $1@$1.05; Bangor, $1.05.

NOTES OF THE WEEK.

For the month of February the gross earnings of the Philadelphia & Reading Coal and Iron Company were $1,975,226 and the gross expenses $2,038,402. One-twelfth of the current year's fixed charges ($18,000), added to the loss from mining makes the total deficit for the month $169,176—a decrease of $45,551 from the deficit of February, 1894. The deficit for the three months of the fiscal year from December 1st to February 28th, is $655,976, an increase of $316,594 over the deficit for the corresponding period last year.

Buffalo. March 28.

(From Our Special Correspondent.)

The anthracite coal trade is a shade quieter in consequence of several days of sunshine the latter part of last week and the beginning of this. No changes made in quotations and nothing to indicate that any will be recorded on April 1st.

Bituminous coal only in very moderate demand at nominally unchanged figures, as the supply is more than adequate for the requirements of the trade.

There is nothing yet to report in the way of freight on coal by lake westward. There is too much ice in sight here and elsewhere to warrant the idea of an early opening of navigation.

The recent warm weather has softened the ice in Buffalo river so that a channel has been broken, enabling vessels to be moved with but little difficulty.

The Cleveland Company has contracted for five steel canal boats and a propeller as a commencement of its plan for a line of boats from Cleveland to New York by the Erie Canal and Hudson River.

The first ore charters of the season were made a few days since, a large block having been contracted for at 75c. per ton from the mines to Lake Erie ports, good to September only.

When navigation will open is a problem yet to be solved. Accounts of the condition of the ice on Lakes Michigan, Huron, Superior and Erie are very contradictory.

The Buffalo Merchants' Exchange has requested the Secretary of War to appoint a commission of engineers to report as to what will be the effect on the level of the lakes when the Chicago Drainage Canal is completed. It is feared that the water of the lakes will be lowered considerably.

The contract for fueling vessels at this port with soft coal will be operative at the opening of navigation. The Bell, Lewis & Yates Company, and Messrs. Frank Williams & Co., will supply 300,000 tons at a rate fixed by the Lake Carriers' Association at its last annual meeting.

The firm of E. L. Headstrom & Co. have discontinued their coal business at Racine. Mr. J. C. Carroll, the former agent, will succeed them.

Another natural gas well has been struck at East Hamburg, just outside our city limits. The production is estimated at 2,000,000 cu. ft. daily.

Mr. Seymour N. Forbes has been appointed secretary of the Buffalo Freight Bureau, with offices in Merchants' Exchange Rooms. He will look after all matters connected with freights, discriminations in rates, etc.

Chicago. March 27.

(From Our Special Correspondent.)

The situation in the anthracite coal trade of Chicago is unchanged, the buying continuing fairly well, with small quantities the main feature. Trade is much better than was expected from the advent of warmer weather, and it is presumed that the very low price that hard coal is selling for is one of the greatest reasons for the fair consumption at the present time. There is a considerable amount of hard coal being delivered on past contracts, but there appears to be a disposition on the part of the consumer not to contract for any large amount of coal now, though they are making the best of the prevailing low prices.

The bituminous trade remains, like anthracite, unchanged. It would seem from the quite fair sales that the low price of soft coal was bringing in a considerable business. Large quantities of soft coal continue to be shipped from the Illinois and Indiana fields, and the accumulation on the tracks in and about this city is growing a little larger with each day. Dealers are evidently taking much advantage of the railroad war in shipping coal to Chicago at greatly reduced rates. Advance notice announcing new soft coal-carrying rates, to take effect May 1st, have just been issued by the Chicago and Eastern Illinois Railroad. The rate from Brazil, Ind., to Chicago on block coal will be 95½c. per 100 lbs.; from Rosedale, Mecca, West Union, Clinton, Lyford and Norton Creek, Ind., 62½c.; from Danville, Crape Creek, Glenburn and Fairmount, 55½c. Bituminous coal and small coals, 62½c.

Pittsburg. March 28.

(From Our Special Correspondent.)

Coal.—Taken as a whole, trade is in a better shape than for sometime past. The river mines generally are at work, hence the total amount of coal brought through lock No. 1 for this week was 400,966 bushels, contained in 78 boats, 200 barges, 10 fuel barges and 112 flats. It was the heaviest shipment of the year. The heaviest daily shipment was on Saturday, 932,500 bushels. The year's shipment from January to date exceeds same time last year, 14,500,000 bushels.

The stock of Pittsburg coal afloat on the Mississippi between Natchez and New Orleans was 120 boats and 5 barges, as against 61 boats and 9 barges same time last year. Several tons left during the week; others will follow. The ice having disappeared, the Ohio is in good boating order.

The railroad coal miners' strike is still on in the majority of the mines. The close approach of the time for mining coal for lake shipments has driven the operators to take some action. The lake trade will begin this year as usual on April 15th. None of the operators who are not paying the 69c. rate are operating their works, except the New York and Cleveland, and the Pittsburgh and Chicago gas coal companies. The companies are now in session.

Connellsville Coke.—Since the H. C. Frick Coke Company advanced wages, and other operators followed their example, the condition of affairs in the coke regions has become peculiar. There are some operators who have refused to make similar concessions and they may make trouble. Two months ago they took on a lot of contracts, three to six months, at 85 to 90c. per ton, not thinking that the price of coke would go up before July 1; now these operators are caught with their cheap contracts on hand, while the price of coke has materially advanced. Already the disposition shown by these operators is indicative of the policy they would like to and may yet pursue; it would be much cheaper for them to have their plants lie in idleness several months than to grant the advance in wages. The Dunbar Furnace Company is proposing to rent 150 Semet-Solary process by product ovens at their plant at Dunbar. The same quality of coke that is now being used can be made by the by-product ovens in one-third to one-half the time.

The week's shipments from the region amounted to 159,225 tons, distributed as follows: To Pittsburg, 2,568 cars; to points East, 1,746 cars; to points West, 4,695 cars; total, 9,009 cars. Price of coke after April 1st, f. o. b. at ovens, per ton of 2,000 lbs., crushed, $1.65; foundry, to consumers, $1.50; furnace coke, $1.35.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, March 29, 1895.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending Mar. 30, 1894.		Week ending Mar. 29, 1895.		From Jan., '94	From Jan., '95
	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Anthracite.	32	16,902	34	20,005	194,184	271,197
Coke...	84	91,507	121	131,613	1,122,731	1,797,317
Charcoal...	18	4,098	17	3,765	51,178	57,329
Totals ...	134	112,507	172	155,383	1,368,093	2,125,843

The item of importance in the market has been the advance in the price of coke, to take effect April 1st, to $1.35 for furnace and $1.50 for foundry coke. This is in accordance with the advance in the wages of coke-makers recorded last week. Of no less importance is the action of producers of standard Lake Superior ores, advancing prices 15c. per ton until September. The unquestioned result of this will be to raise the price of Bessemer iron and possibly of foundry grades also. What the advance will be cannot be anticipated, but an increase of 35c in coke will likely mean a raise of at least 50c. in Bessemer pig.

As shown by the letters from our correspondents, there is a marked improvement in the condition of the iron trade throughout the country. This is partly the result of the action above noted, but is in greater part owing to better business conditions which are now prevailing.

NOTES OF THE WEEK.

The following tables showing the production of Connellsville coke for the first week of each month since April, 1891, and the number of ovens in operation March 28th, are useful for reference:

Weekly Production.

Week ended—	Tons.	Week ended—	Tons.
April 7, 1891.....	71,987	October 6, 1894.....	141,453
May 5.....	18,157	November 3.....	139,207
June 2.....	36,865	December 8.....	143,453
July 7.....	72,993	January 5, 1895.....	153,005
August 4.....	108,672	February 3.....	149,779
September 8.....	140,623	March 2.....	158,623

Active Ovens

	No. Ovens.
H. C. Frick Coke Co.....	7,512
McClure Coke Co	1,889
W. J. Rainey.....	993
Hecla Coke Co.....	525
Cochran and others.....	737
Hostetter Connellsville Coke Co.....	607
Small operators.....	768
Ovens operated by iron manufacturers	1,748
Total.....	14,779

The South Bethlehem Iron Works have received an order for 25 miles of steel rails, 63½ and 70 lbs., for the Atlanta & West Point Railroad and the Western Railway of Alabama.

A press dispatch from Braddock, Pa., says that 6 draughtsmen, together with a number of carpenters, machinists and pattern makers have been laid off at the Edgar Thompson works, and 10 of the chemists will be dismissed. Other changes are expected as every effort is being made to reduce the force to the lowest possible point.

Pig Iron.—The market is very quiet and generally displays little change from last week. Sales have been light. Quotations are as follows: Northern brands, No. 1 X, $12@$12.50; No. 2 X, $11@$12 gray forge, $10@$11; Southern irons, No. 1 foundry, $11.25@$11.50; No. 2 foundry, $10.25@$11; No. 1 soft, $10.50@$10.75; No. 2 soft, $10.25@$10.75.

Spiegeleisen and Ferromanganese.—There has been no material movement in these products. Quotations are: $18@$18.50 for 20% domestic spiegeleisen at furnace, and $19@$20 for foreign, and $47@$48 for 80% ferromanganese at tidewater.

Billets and Rods.—There has been very little business during the past week. There is a more firm tone in the market, but sales are still light. Quotations at tidewater are as follows: Billets, $17.25@$17.75 and domestic wire rods, $23.50@$24.

Rails and Rail Fastenings.—A much better trade has been manifested in this market during the past week, a number of good-sized sales being noted. Rail quotations remain: Standard rails at tidewater, $22.75. In rail fastenings prices remain: Fish and angle plates, 1@1·05c. at mill; spikes, 1·40@1·50c.; bolts and square nuts, 1·80@1·95c.; hexagonal nuts, 1·95@2·05c. delivered.

Structural Iron and Steel.—There is little change in this market. Such sales as have been made are small. Prices, however, remain weak. Quotations are: Angles, 1·20@1·35c.; beams up to 15 in., 1·30@1·50c.; channels, 1·40@1·50c. on dock; tees, 1·45@1·60c. on dock.

Old Material.—There has been practically nothing in this market worthy of note. Nominal quotations remain: Old steel rails, $9.50@$10; old iron tees, $10@$11 per ton; New York railroad scrap, $11.50@$12 per ton, delivered at mill, and yard scrap at $10; wrought turnings, delivered at mill, $8@$8.50; No. 1 wrought scrap at $9.50@$10.50 from yard, and machinery cast scrap $9@$10; old wrought tubes and pipe, $6.50@$7; old car wheel, $9.50@$10.50, New York; cast borings, $6@$6.50, delivered at mill.

Merchant Steel.—Business in this market has been light; Quotations are: Tool steel, 5·65@6·25c.; tire steel, 1·30@1·35c.; toe calk, 1·60@1·70c.; Bessemer machinery, 1·25@1·40c.; open-hearth machinery, 1·85@2c; open-hearth carriage spring, 1·70@1·90c. crucible spring, 3·40@3·65c.; axles, scrap, 1·30@1·50c.; steel, 1·25@1·55c.; bars, common, 1·15@1·30c.; refined, 1·15@1·90c.; steel hoops, 1·45@1·60c. delivered; hooks and pins, 1·40@1·50c.; plates, flange, 1·50@1·65c.; firebox, 2@2·25c.; marine, 2·45@2·70c.; sheared, 1·80c.; shell, 1·40@1·50c.; tank, 1·20@1·40c.; universal mill, 1·25@1·40c. delivered.

Buffalo. March 28.

(Special Report of Rogers, Brown & Co.)

The air of activity still continues, with prices as much depressed as ever. There is a disposition on the part of Northern furnaces to hold off from answering future delivery inquiries until they can see farther into the future of raw materials, but Southern furnaces are crowding for business of any sort which meets their limit in price, and have consequently booked considerable amounts. While the signs of the times are encouraging, the realization of hopes are painfully deferred. We quote on the cash basis f. o. b. cars Buffalo: No. 1 foundry strong coke iron, Lake Superior ore, $11.00; No. 2 foundry strong coke iron, Lake Superior ore, $10.50; Ohio strong softener, No. 1, $11.10; Ohio strong softener, No. 2, $10.60; Jackson County silvery, No. 1, $15.50; Lake Superior charcoal, $13.75; Southern soft, No. 1, $11.00; Southern soft, No. 2, $10.75; Hanging Rock charcoal, $18.50.

Chicago. March 27.

(From Our Special Correspondent.)

There is no change in the iron trade situation over the preceding week. The demand in all lines remains but moderate; there has been no large buying, nor is there much in sight. There are some inquiries for fair sized quantities of pig iron, bar iron and structural material. The Rock Island railroad will continue raising their tracks into the city, and it is understood that they will shortly be in the market for 1500 tons of bridge material.

Pig Iron.—A fair week in the pig iron trade has passed, business being equal to if not slightly better than last week. There have been numerous sales of carload to a couple of 100-ton lots, and a couple of 500 ton quantities. There is a considerable inquiry coming in, but the buyers of very large lots continue to hold off, though they appear to try the market very often. In Southern iron trade has been quite good and the market a shade better as to prices. It is expected that with the increase of wages among the cokeworkers the price of pig iron in this market will appreciate from 25c. to 50c. Prices are per gross ton f. o. b. Chicago: Lake Superior charcoal, $12@$13.50; Lake Superior coke No. 1, $10.25@$10.50; No. 2, $10@$10.25; No. 3, $9.50@$9.75; Local Scotch No. 1, $10.50; No. 2, $10; Jackson County silveries, $14.50@$15; Southern coke, foundry, No. 1, $11@$11.25; No. 2, $10@$10.50; No. 3, $9.75@$10; Southern coke, soft, No. 1, $10@$10.50; No. 2, $9.75@$10; Southern car-wheel iron, $17.50@$18; Southern silveries No. 1, $11.25@$11.75; No. 2, $11.25;

Tennessee charcoal No. 1, $13@$13.50; Bessemer, $11@$11.25; Ohio strong softeners, $13.

Structural Material.—There is a much better inquiry noted for structural material, both in bridge and building shapes. The Rock Island Road, it is said, is in the market for 1500 tons of bridge material to complete elevation of its tracks. Prices are a degree or two firmer. Quotations are f. o. b. Chicago, mill lots: Angles, 1·30@1·35c.; tees, 1·50c.@1·60c.; universal plates, 1·35c.; beams and channels, 1·40c.

Plates.—The plate market is as yet poor, the week having shown no improvement. Prices are: Flange steel, 1·60@1·75c.; fire-box steel 1·95@4·50c.; tank steel, 1·35@1·40c.; boiler tubes, 70 to 75% discount.

Merchant Steel.—There has been a slight increase in the amount of business transacted in Merchant steel, probable due from the manufacturers of implement machinery increasing their orders. Prices are: Carload lots, machinery, 1·60@1·70c.; tire steel, 1·50@1·60c.; Bessemer bars, 1·25@1·35c.; toe calks, 2·00@2·10c.; crucible spring, 3·40@3·65c.; tool steel, 5½@6½c.; specials, 10·50@11·50c.

Galvanized Sheets.—Sheets have had a fair week, sales from store having improved somewhat. Prices from store, 75, 10 and 5% off.

Black Sheet Iron.—Business in black sheet remains poor, and there are no indications of an early improvement. Carload lots for No. 27 common iron is 2·25@2·30.

Bar Iron.—Nothing has materalized in the bar iron trade during the week to show any improvement ever the preceding one. There has been some difficulty at the Andrews Bros. Hazelton Mills at Youngstown, O., among the employees over wages, but the matter was quickly adjusted. Common iron is selling at 1@1.05c. and refined 1·15c.

Billets.—Some few sales of small quantities constitutes the business of the week; $16.50 is the quotation.

Steel Rails.—Large buyers still hold off, the week being a very poor one as to sales booked. Quotations are $23@$25.

Old Rails and Wheels.—Old steel rails have had an inning this week, a sale of 2,500 tons having been made at $7.50 Chicago. Old iron wheels are scarce. Old iron rails sell for $10.50@$11, and old wheels $8.75.

Scrap.—The market for scrap has improved through the influence of a number of small sales. Quotations are: Forge, $8.50@$9; cast iron borings, $3.50; wrought iron turnings, $4@$4 50; axle turnings, $6.50; mixed steel, $5.50; tires, $15.50@$13; iron axles, $13.

Philadelphia. March 29.

(From Our Special Correspondent.)

Pig Iron.—There is a general stir in the eastern Pennsylvania iron market, though big sales have not been made. Buyers are at a loss what to do. The advance in Bessemer has not directly affected forge and foundry. Great interest prevails and there is much correspondence between makers, brokers and consumers. There is a general expectation that prices will move up. A number of options have been withdrawn. Buyers as a rule will soon be obliged to buy iron. Forge is quoted at $10.50; No. 2 Foundry at $11.50 and No. 1 at $12.50, with a few brands at $12.

Steel Billets.—Buyers show more anxiety to secure billets for May delivery, but there is a much stronger feeling among representatives of sellers. Three or four offers were made yesterday and rejected. Both sides are anxious to hold off until the flurry subsides. A fair quotation is $17.25.

Merchant Iron.—There is a further improvement in common and medium iron and quite an influx of good-sized orders is reported at Schuylkill Valley mills. Iron has sold at 1c., but in a small way better prices are in sight.

Nails.—The market has been pretty well loaded up with cut and wire nails. Makers say were it not for this a better price could now be had. Building prospects are excellent.

Sheet.—The week's business at sheet mills has been the largest for a long time. Manufacturers explain it by saying that the prospects of stronger prices has sent buyers into market.

Skelp.—One large order was placed last Saturday. Small ones followed this week at $1.20.

Merchant Steel.—The movement is now steady, but purchases are small.

Plate and Tank.—The plate mills are all doing a good business. All Eastern mills have booked good orders within a few days, and brokers are anxious for quieter conditions in crude material, so that they can close up some negotiations.

Structural Material.—The business done this week does not foot up as much as last week, but certain developments afford great encouragement to agents and manufacturers. They think there must soon be a landslide of orders.

Steel Rails.—Eastern rail makers have imparted the fact to a few brokers that there will probably be contracts in the next 30 days for about 60,000 tons.

Old Rails.—Liberal offerings at $12.

Pittsburg. March 28.

(From our Special Correspondent.)

Raw Iron and Steel.—As regards the general eatures of the market, during the past week, the conditions have been in the direction of improvements, and in a measure reflect the expansion in the consumption which has been going on for some months past. The growth of sentiment has been toward a more active market as the season advances, and the existing bar values may be expected to advance with dearer fuel and with the lessened activity of competition from the works that have lately taken a large share of the orders coming on the market. Even with the large business that has been done in finished material, there are said to be larger orders under negotiation, that our mills expect to capture a liberal portion of the work in the near future. The demand for pig iron in this section, while of generous proportions, shows very little change as compared with a week ago. The regular customers of the producers of brands of iron, which are classed as standard, absorb the larger output of their furnaces, but, outside of this, demand is hardly equal to the production, and as a consequence there is considerable iron remaining unsold throughout the country; what effect this accumulation of iron, and the possibility of a further increase with the existing rate of production, will have upon the course of prices is the question that is being asked by consumers, and most of them are disposed to wait until there is a more equal ratio between supply and demand before placing orders based on something that is still in anticipation. The late advance in cokers' wages has had a stimulating effect upon the steel trade; it means a greater cost for raw material, and, as Bessemer ore promises to be higher, the conclusion is general that prices for steel products have touched bottom. The full supply of pig metal prevents anything like an aggressive upward movement in prices, but holders are firm in their views and a little inclined to drop inside quotations unless to a strictly first-class buyer. Bessemer steel billets are a shade firmer; the undertone of the market is stronger; holders show no inclination to force business at present prices. The outlook for an active spring and summer trade grows brighter so far as relates to finished iron and steel; as the weather improves business will do likewise.

The sharp advance in steel the past 48 hours, and the continued advance in Bessemer metal is a surprise. Steel billets, however, have not advanced in proportion to Bessemer iron, but it cannot be long delayed now. Sales of metal have been made at equal to $10.35@$10.75, Pittsburg. Steel has sold at $15 25@$15.50 f. o. b., at makers' mill, with a large increase in the demand. Bessemer ores, fully 200,000 tons sold this week at 15@25c. per ton advance over last year's prices; with the pig advance in coke the market is decidedly a bullish one.

COKE SMELTED LAKE AND NATIVE ORE.

Tons.		Cash.
5,000	Bessemer, April, May, June, Valley Furnace	$10.00
3,000	Bessemer, April, May, Pittsburg.	10.25
2,500	Bessemer, April, May, June	10.35
2,500	Bessemer, Valley Furnace	9.70
2,000	Bessemer, April, May	10.30
1,500	Bessemer, Valley Furnace	9.90
1,000	Bessemer, April, May	10.50
1,000	Bessemer, spot	10.50
1,000	Mill iron, city furnace	9.25
850	Gray Forge, April	9.15
500	Gray Forge	9.00
500	Gray Forge	9.25
400	No. 1 Foundry	10.75
300	No. 2 Foundry	10.00
300	Gray Forge	9.05
200	Base gray	8.90
100	No. 2 Foundry	9.65
100	No. 1 Foundry	10.50
100	Bessemer, spot	10.50

CHARCOAL.

225	Cold Blast	$22.50
200	Cold Blast	22.50
100	Cold Blast	22.50
50	No. 2 Foundry	15.75
50	No. 2 Foundry	16.00

BLOOMS, BILLETS AND SLABS.

4,000	Billets, May, June, July, at mill	$15.10
2,500	Billets, April, May, at mill	15.40
2,000	Billets, April, May, June, at mill	15.25
1,200	Billets, April, May, at mill	15.20
1,000	Billets, April, May, at mill	15.15
500	Billets, April, May, at mill	15.20

SKELP IRON.

500	Nar'w gr'v'd.	1.17½ 4 m.
360	Wide gr'v'd.	1.17½ 4 m.
300	Sheared	1.27½ 4 m.

SKELP STEEL.

700	Sheared	$1.10 4 m
285	Wide gr'vd	1.00 4 m.
300	Nar w gr'ved	1.00 4 m.

STEEL WIRE RODS.

1,250	5 Gauge American	$21.40

SHEET BARS.

630	at Makers' mill	$18 00

FERRO-MANGANESE.

50	80% Foreign	$18.50
50	80% Domestic	47.50

BLOOMS, BILLETS, BAR ENDS.

700	Blooms and billet ends	$10.00

MUCK BAR.

450	Neutral, delivered, April	$18.20
300	Neutral, delivered, April	18.25

SPELTER.

100	Prime Western	$3.15

OLD RAILS.

500	Iron rails	$12 25
350	Steel rails	9.75

SCRAP MATERIAL.

500	Iron axles, hammered, gross	$16.00
300	No. 1 R. R. W., scrap, net	19.10
225	Soft Steel, scrap, gross	10.00
100	Iron Axles, hammered, gross	16.25
50	Sheared, wrought, net	11.50

METAL MARKET.

NEW YORK, Friday Evening, March 29, 1895.

Gold and Silver.

Prices of Silver per Ounce Troy.

March.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.	March.	St. Ex.	London Pence.	N. Y. Cts.	Value of sil. in $1.
23	4.89	28⅞	63¼	.489	27	4.89¼	29⅛	64	.495
25	4.89	28⅞	63⅜	.490	28	4.89¼	29⅛	63¾	.493
26	4.89¼	29⅛	63¾	.493	29	4.89¼	29⅛	64⅛	.496

Silver has advanced under the impulse of a feeling that higher prices are in order, based upon the prospect of peace in the East, special orders from the continent, and a belief that a new monetary conference will do something for the white metal. As a result supplies have not been pushed forward, and buyers observing a curtailment in offerings have become more inclined to make purchases. Silver closed in London to-day at 29⅛.

The United States Assay Office at New York reports the total receipts of silver at 191,000 oz. for the week.

Gold and Silver Exports and Imports.

At all United States Ports, February, 1895, and Years 1895 and 1894 in coin and bullion:

	Gold.		Silver.		Total excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Feb..	$1.565 194	$5,632,197	$3,071.336	$392,928	I. $1,388 535
1895..	27.770,454	6,891.466	6.826 837	1,641.834	E. 27,063,991
1894..	4,488,754	2,816,629	8,976,768	1,774,690	E. 8,841,293

Imports and exports of gold and silver in ores for the two months to February 28th are reported as below:

	Gold.		Silver.	
	1894.	1895.	1894.	1895.
Imports	$6',239	$31,612	$1,142,795	$1,054,144
Exports	6,8 6	.....	46,6 8	.....
Excess, Imports	$53,145	$31,612	$1,096,137	$1,054,144

These imports and exports in ores are not included in the table of exports and imports of coin and bullion given above.

The statement includes all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York.

For the Week ending March 23d, 1895, and for Years from January 1st, 1895, 1894, 1893 and 1892:

	Gold.		Silver.		Total Excess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
We'k	$755,722	$2,207.430	$643 684	$3.291	I. $811,315
1895..	28.463,201	11.644,111	6,802.873	292.989	E. 23.328,974
1894..	5,823,152	2,742,512	10,175,104	391,018	E. 12,861,726
1893..	33,700,178	5,045,656	6,917.015	818.812	E. 31 752,725
1892..	12,043,255	5,359 059	5,755,808	339,523	E. 12,100,481

The gold exported for the week went all to the West Indies; the silver to London. Of the gold imported $434,250 came from France and $1,532,350 from England; the silver imported came from the West Indies.

During the five days ending March 28th, the imports and exports of gold and silver from the port of New York were as follows: Imports, gold, $286,350; silver, $27,548. Exports, gold, $406,778; silver, $369,779. Of the gold exported, $113,788 was in Spanish coin and went to the West Indies; $44.200 was in Ecuadorean coin and went to South America; the rest was in American coin, $1,790 of which went to Germany, $27,000 to the West Indies, and $20,000 to South America. Of the silver exported, $2,002 was in Peruvian coin and went to South Ameria; $51 was in Mexican coin and went to South America also; the rest was in American bullion, $526 of which went to Germany, and £367,200 to London.

FINANCIAL NOTES OF THE WEEK.

In writing of the general condition of business from week to week in a period like the present, there is not any startling change to record; but we continue to note a steady improvement in business and a very much better feeling in financial circles. On all sides we hear reports of new construction undertaken and new enterprises begun, and of an increasing amount of work in manufactures of all kinds. Our market reports are generally favorable, and though no great increase in prices can be expected for the present, the growing demand for goods will make itself felt without doubt in this direction before long.

The feeling is extending into speculative circles also, and it is to be noted that the amount of dealings of this class is gradually growing. The demand for stocks, which for a considerable time past has been limited to those of the strict investment or "gilt-edged" variety, is extending itself to others in which the dealings have been lately very limited. The accumulation of money at financial centers is gradually decreasing, and the bank statements, as we have noted below, show a constant withdrawal of the deposits of the interior banks which have raised the amount of money seeking investment in New York to so high a figure during the greater part of the past year. This is, perhaps, the most favorable sign of all, since it indicates a demand for money all over the country and shows a general improvement in business in a very decided way.

A Paris dispatch of March 25th notes the formation of a national bi-metallic league with M. Loubet, formerly head of the government, as president. Among the vice-presidents are M. Magnin, governor of the Bank of France; M. de Normandie, president of the Comptoir d'Escompte, and Deputy Meline. This national league will include all the local associations of bimetallists, and the main object is to open relation with similar leagues in other countries, and to arrange plans of co-operation. The dis-

patch states that the League already has 3,000 members, and that the number is rapidly increasing.

All the Australian colonies, excepting New South Wales and Queensland, have instructed their agents in London to urge upon the Colonial ministry the desirability of an international monetary conference and to express the hope that one will be held at an early date, with the co-operation of Great Britain. New South Wales, it is expected, will take the same action.

The formal invitations to the new bi-metallic conference have not yet been issued, nor has any further official statement been made with regard to it. At present everything depends on the initiative action of Germany, and this may be delayed for some time to come, though it appears to be certain that the German Government will not recede from its promises to the Reichstag, and the general impression is that the conference will be held.

The London financial papers have been actively urging upon the merchants and brokers of that city the importance of some expression of opinion in favor of mono-metallism in view of the recent vote in Parliament and the position of several well-known leaders upon the question of bi-metallism. They say that it is of great importance that the business world should express strongly its opinions against any concessions in favor of silver. The opinions of business men, as is well known, have great weight with an English government, but in this case the appeals do not seem to take much effect. The business men of London are taking the matter very quietly, and do not seem to be at all disturbed by the prospect of a new conference, so that no general or decided expression of opinion has been made, or appears likely to be given.

Some shipments of gold from London to New York have been reported this week, £200,000 having been shipped early in the week. Another shipment of £300,000 was to be made later, it was said, but the report was contradicted, and it is now understood that this shipment, on syndicate account, will probably be made during the coming week. These gold shipments are being made as quietly as possible, and there is no haste about them, as the Syndicate is still ahead on its contract to furnish gold to the United States Treasury.

We note that the London papers are very careful to say that the syndicate shipments are not only "gradual," but also that they are made from "outside sources"—whatever that may mean—and that no disturbance of the market is to be feared. Evidently they do not like the idea of losing gold, and any intimation of a possible drain of the yellow metal is exceedingly unwelcome to them. They have been dwelling considerably of late on the increased production of gold and its abundant supply; but, at the same time, any loss in current coin reserves causes them a degree of anxiety which cannot be concealed, and which is the most conclusive evidence that even the most obstinate gold monometallist finds the gold supply too small. What would be said in the London papers if a sudden demand for $100,000,000 in gold should be made?

Imports of specie by water at San Francisco for the two months ending February 28th were as follows:

	Gold.	Silver.	Total.
Mexico	$6,328	$199,645	$255,973
British Columbia	22,773	.....	22,773
Australia	852	.....	852
Central America	25,000	.....	25 000
Japan	1,000	2,500	3,500
Society Islands	507	.....	507
Totals	$106,160	$202,145	$308,605
Total, 1894			786,098

The total receipts in February were $129,812. The total decrease for the two months is $481,493, or 61.2%, from last year.

The statement of the United States Treasury on March 28th shows balances in excess of outstanding certificates as below, comparison being made with the corresponding day of last week:

	March 21.	March 28.	Changes.
Gold	$90,861,800	$90,686,616	D. $175,184
Silver	18,271,791	19,435,505	I. 1,163,714
Legal tenders	50,529,379	52,591,430	I. 2,062,051
Treasury notes, etc.	31,650,982	29,043,763	D. 2,607,219
Total	$191,313,952	$191,757,314	I. $443,362

Government deposits with national banks on the same date amounted to $15,377,881, an increase of $203,005 during the week.

The receipts of the United States Treasury for the week ending March 23d for three years past were as follows:

	1893.	1894.	1895.
Customs	$4,459,063	$2,448,289	$3,372,276
Internal revenue	2,708,692	2,670,404	2,246,591
Miscellaneous	319,828	943,247	351,346
Total	$7,487,583	$6,061,990	$5,980,213

The receipts for the week showed an increase of $247,788 over those for the preceding week this year. The expenditures for the week were $5,829,287, or $150,926 less than the receipts.

Total United States Treasury notes issued under act of July 14th, 1890, in general circulation and in the Treasury, $152,452,280. Against these are held 26,169,956 coined standard silver dollars and silver bullion purchased at a cost of $124,287,595; making a total of $150,457,551.

A Washington dispatch of to-day, March 29th, reports that Dr. Townsend, Superintendent of the Philadelphia Mint, has sent in his resignation. This action, it is said, is entirely voluntary on his part, and perhaps also somewhat unexpected.

The present indications are that the total receipts of the Treasury for the fiscal year, ending June 30th, will not vary very much from Secretary Carlisle's estimate of $340,000,000. This estimate of the Secretary included customs, internal revenue, and miscellaneous receipts, but not those of the Post Office Department; these are usually disregarded, since the receipts and expenses of that department very nearly balance each other. The total receipts of the Government, with the exception just noted, up to the end of March, will be about $240,000,000, and there is little doubt that the receipts for the remainder of the fiscal year will run up to $100,000,000, if they do not slightly exceed that amount. The latter is more probable, as in this estimate no allowance is made for the improvement of business and the increase in customs and internal revenue receipts resulting therefrom.

The statement of the New York banks—including the 66 banks represented in the Clearing House—for the week ending March 23d, gives the following totals, comparisons being made with the corresponding weeks in 1894 and 1893:

	1893.	1894.	1895.
Loans and discounts	$434,468,300	$445,571,400	$484,652,400
Deposits	439,504,400	544,465,400	509,047,200
Circulation	5,618,500	11,243,000	12,366,300
Specie	71,623,700	98,652,400	65,120,400
Legal tenders	44,495,600	116,541,600	76,287,900
Total reserve	$119,119,300	$215,194,000	$141,408,300
Legal requirement	109,876,100	136,116,350	127,511,800
Surplus reserve	$9,243,200	$79,077,650	$13,896,500

Changes during the week were decreases of $4,351 in loans, $2,453,200 in specie, $3,361,400 in legal tenders and $9,449,300 in deposits; an increase of $70,800 in circulation. The only deduction to be drawn from these changes is that the withdrawal of deposits by out-of-town banks still continues.

The Bank of England, on Thurday, March 28th, reported its gold holdings at £37,729,960, an increase of £6,939,840, compared with the corresponding date last year. The Bank shows a gain of £360,000 in gold during the week in spite of exports made to South America and the United States. The increase was due to receipts from South Africa and Egypt, and also to purchase of gold bars received from Paris. Owing to a large increase in deposits, however, the proportion of reserve has fallen a little, and was 75.79%, against 69·84% last week, and 54·87 a week ago.

The London market has stiffened a little owing to some anticipated demands and also to an increase in the speculative use of money. More money is going into stocks and more money is going abroad for investment than has been the case since the Baring failure four years ago. The first fruits of this change was shown in the mining stock market, notably in the "Kaffir" market several weeks ago; but they are becoming apparent in other directions. Some increase in the purchase of American securities is reported and the indications are of growing confidence in those stocks. The Norfolk & Western receivership did not have as discouraging an effect as many expected since the cause of that company's troubles were pretty well understood. At any rate, the company has been frank with its security-holders and showed evidence of an intention to do right, in marked contrast to the doubtful transactions which marked the Reading bankruptcy and the more than doubtful dishonesty shown in the Atchison, Topeka & Santa Fe.

The Bank of France on Thursday, March 28th, reported its total specie holdings at 2,112,000,900 fr. gold, and 1,242,559,000 fr. silver; an increase of 388,751,889 fr. gold, and a decrease of 28,046,734 fr. silver. Changes for the week by a decrease of 33,775,000 fr. gold and an increase of 275,000 fr. silver. The Bank's loss in gold, which has continued for several weeks, seems to be increasing. The loss this week, it is said, has been chiefly in gold sold to London. There have been some exports to the United States, but not drawn directly from the Bank.

Shipments of silver from London to the East for the year to March 15th are reported by Messrs. Pixley & Abell's circular as below:

	1894.	1895.	Changes.
India	£1,606,510	£1,061,330	D. £512,180
China	468,780	777,750	I. 308,970
The Straits	144,680	136,205	D. 8,475
Japan	40,800	105,000	I. 64,200
Total	£2,230,770	£2,083,285	D. £177,485

Shipments for the week were £65,500 to India and £106,100 to China, in bar silver, and £31,905, in Mexican dollars, to the Straits. The only receipts reported were £106,000 in bar silver from New York.

Indian exchange continues fairly strong and the quotations in London this week are 13¾d. to 13⅞d. per rupee. At the usual Wednesday offerings of Council bills in London some 210 lakhs were applied for, nearly three times the amount offered, so that most of the allotments were made at the higher figures. The Council has still a considerable amount to make up the amount of its remittances before the close of its fiscal year, but no effort will be made to press the sale of bills, it is understood, as any deficiency can readily be funded. Some short loans will have to be taken up in May and the amount needed to complete the London requirements of the Indian government will probably be included with them in an addition to the funded debt.

We remarked recently on the comparative steadiness of the dollar and tael exchanges. These have been somewhat excited by the recent risein silver, and also by the contradictory statements received from the East.

For convenience of comparison, we have grouped together in the table below the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced in dollars, and comparison is made with the holdings at the corresponding dates last year:

	Gold.	Silver.	Total.
Asso. Banks of New York	.....	.....	$65,120,400
1894	.....	.....	98,652,400
Bank of England	$188,649,800	.....	188,649,800
1894	153,950,600	.....	153,950,600
Bank of France	422,400,000	$248,114,500	670,514,500
1894	345,649,622	254,121,147	599,770,769
Imp. Bank of Germany	.....	.....	273,450,000
1894	.....	.....	226,670,000
Austro-Hungarian Bank	89,465,000	68,307,000	157,772,000
1894	51,311,000	81,285,000	132,596,000
Netherlands Bank	21,745,000	35,485,000	57,230,000
1894	21,645,000	33,395,000	55,040,000
Belgian National Bank	.....	.....	26,356,000
1894	.....	.....	23,668,000
Bank of Spain	40,021,000	61,553,000	101,604,000
1894	39,590,000	39,915,000	79,505,000
Bank of Italy	59,875,000	13,435,000	73,310,000
1894	.....	.....	.....
Imp. Bank of Russia	274,075,000	52,185,000	326,260,000
1894	.....	.....	.....

The return for the Associated Banks of New York is of date March 23d; all the others are of date March 28th, except the Bank of Italy, whose return is dated February 20th, and the Bank of Russia, February 1st-13th. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports its gold only, not considering silver at all. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

The State Department announces that it has received official notice of the revision of the Mexican customs tariff which will take effect April 1st. The new tariff makes changes in the duties on the following articles which are frequently exported from the United States to Mexico: Tinware, manufactures of iron and steel, manufactured articles of gold, silver or platinum, linen and other textile manufactures.

The Italian Chamber of Commerce in the United States has received notice of the issue of a decree by the Italian government, exempting from duty importations of salt into Sicily from the United States. This will make it possible for the treasury department to admit Italian salt into this country free of duty, as the present law puts salt upon the free list, except from countries which impose a duty upon American salt.

Domestic and Foreign Coins.

The following are the latest market quotations for the leading foreign coins:

	Bid.	Asked.
Mexican dollars	$0.51½	$0.52½
Peruvian soles and Chilean pesos	.50	.52½
Victoria sovereigns	4.87	4.89
Twenty francs	3.88	3.92
Twenty marks	4.76	4.80
Spanish 25 pesetas	4.83	4.89

Other Metals.

Copper.—There has been a hardening tendency throughout the week. The export sales of lake copper have greatly relieved the market of this description, and the larger companies refuse to sell now except at 9½c. It is true, a few contracts have been made from second hands and from the smaller companies at slight concessions, but very little copper is available at these figures, and it has nearly all been disposed of. In electrolytic copper the transactions have been rather large at 9¼c., or a shade less, but stiffer rates are now also asked. For casting copper the demand continues rather lan ui d, and we have to quote 9c.@9⅛c. In any case, the declining tendency for copper has been checked, and more confidence is shown in every direction. Arizona copper is still held above the market.

The foreign market, while not specially active, has also again become quite firm and g. m. bs. have hardened somewhat, the closing quotations being £39 2s. 6d. @ £39 7s. 6d. for spot, and £39 10s. @ £39 12s. 6d. for three months prompt. For refined and manufactured, we quote: English tough, £41 10s. @ £41 15s.; best selected, £42 @ £42 5s.; strong sheets, £48 5s. @ £48 10s.; India sheets, £46 5s. @ £46 10s.; yellow metal, 4d.

A large business in fine copper has again been done, especially in electrolytic, but the terms can not be definitely ascertained. It appears that sellers are rather stiffer in their ideas, otherwise still further contracts could have been entered into. The demand from the East is said to be on the increase.

Interesting trials are now being made by some of

our leading railroad companies, like the New York Central & Hudson River, the Pennsylvania and the New York, New Haven & Hartford, in substituting electricity for steam, and trolley wires appear to be most in favor. If this proves to be a success, a tremendous demand for copper ought to spring up, this being an entirely new outlet of great consequence. We shall keep our readers closely posted as to the results obtained.

Copper Exports.—The exports of copper from the port of New York during the week ending March 29th, 1895, as reported by the New York Metal Exchange, were as follows:

Havre-Foreland	Pigs	25 tons.
Hamburg-Phœnicia	Bars	25 "
Havre-Westernland	Plates	50 "
Rotterdam-Werkendam	Plates	174 "
" "	Ingots	31 "
Havre-La Gascogne	Pigs	25 "
" "	Bars	25 "
" "	Plates	25 "
Liverpool-Runic	Bars	10 "
Matte :		
Havre-Foreland		15 "
Liverpool-Runic		100 "

Exports of copper from Baltimore for the week ending March 29th are reported by our special correspondent as follows:

Rotterdam-Venango	27 cakes	22,840 lbs.
" "	11,222 plates	224,000 "
Hamburg-Lisnacrieve	827 bars	112,048 "
" "	904 cakes	165,105 "

This is a total of 390 long tons of copper and 115 tons of matte from New York, and 234 tons of copper from Baltimore, making in all 624 long tons of copper and 115 tons of matte for the week.

The unusual fact this week is noted of imports of copper, 20 tons of ingots being reported per steamer "Greece" from London, and 25 tons of ingots per "Etruria" from Liverpool, making 45 tons imported in all.

Imports and Exports of Metals.—Imports of metals into this port for the week ending March 23d are reported by the New York Metal Exchange as follows: 159 tons tin from Singapore; 175 tons Straits tin from Holland; 50 tons Straits tin from Bremen; 10 tons English tin from Liverpool; 472 tons tin from London; 40 casks antimony from London; 3 casks aluminum from Bremen.

Exports of metals (other than copper) from this port for the week ending March 23d are reported by the New York Metal Exchange as follows: 5 tons old metal to Liverpool; 7 tons old metal to London; 61 tons tin scrap to Antwerp; 22 tons tin scrap to Rotterdam; 105 tons sulphate of copper to Naples, 99 tons sulphate of copper to Genoa; 49 tons scrap iron to Genoa; 50 tons pig iron to Genoa.

Arrivals at Philadelphia for the week ending March 22d were 4,000 tons iron ore from Spain; 3,000 tons iron ore from Cuba.

Arrivals at Baltimore for the week ending March 22d were 25 tons pig iron from Hamburg; 100 flasks quicksilver from London; 24,521 boxes tin plates from the United Kingdom.

Exports of metals, other than copper, from the port of Baltimore, for the week ending March 28th, are reported by our special correspondent as follows: 33 bbls., 22,425 lbs., sulphate of copper to Rotterdam; 362 bundles, 64,500 lbs., tin scrap to Rotterdam.

Tin.—The price of silver has materially affected this metal, and the market is rather strong, but at the higher prices asked, consumers are holding back somewhat with orders. We have to quote spot 14⅛@14¼; April, 14@14⅛, and futures, 13¾@13¾.

The London market has ruled rather firm, and values show an advance. As stocks are rather large, and as the East will be a free seller at present prices, caution seems to be the order of the day when operating in this metal. The week in London opened at £62 17s. 6d., and the closing figures are £63 2s. 6d.@£63 7s. 6d. for spot, and £63 10s.@£63 12s.6d. for three months prompt.

Lead.—The market has been very firm, but transactions have fallen off quite considerably; buyers having covered their wants during the last few weeks, are not eager to pay the higher prices asked. We quote 3.15 New York.

The London market is quoted £9 17s. 6d.@£10 for Spanish lead, and 2s. 6d. more for English, with only small transactions.

St. Louis Lead Market.—The John Wahl Commission Company telegrapas us as follows: Lead is steady at the advance, and 2·92½ is being quoted for both spot and forward delivery, but only retail sales can be effected at that price. Large consumers do not care to anticipate their wants at above 2·90 for forward delivery.

Spelter is somewhat firmer at 3·25@3 30, but consumption still leaves a great deal to be desired.

The foreign market is steady at £13 15s. for common and £14 for special brands.

Antimony is quiet; Cookson's is quoted 8c., and Hallett's at 7c.

Aluminum.—The standing quotations, according to producer's price list, are given below, the three prices named being respectively for small lots, for orders of 100 lbs. or over, and for orders of one ton or over: No. 1 metal, over 98% pure, in ingots ready for rolling, etc., 60c., 58c. and 55c. per lb. No. 1 metal, in ingots for remelting, 55c., 52c. and 50c. per lb. No. 2 metal, over 94%, but less than 98%, in ingots for remelting, 53c., 50c. and 48c. per lb. Rolled sheets, No. 1 metal, 80c.@$1.40 per lb., according to size and thickness. Wire, $1@$2.50 per lb., according to gauge. Tubes, from 14c.@$3.15 per linear foot, according to thickness and diameter. Castings, from 90c. per lb. up, according to pattern and size of order.

Abroad the price is fixed by the Neuhausen Company, which quotes 5 fr. per kilo.—equivalent to 45c. per lb.—at works in Switzerland for small orders; a discount is made on large sales. Quotations in Paris, for large orders, are 5 fr. per kilo. for ingots; 6 fr. per kilo. and upwards for sheets; 10 fr. per kilo. for wire, 0·5 mm. and over; 15 fr. per kilo. and upwards for sheets.

Bismuth.—Quotations are $2@$2.50 per lb., according to size of order. Sales reported are on private terms, making quoted prices nominal only.

Magnesium.—One or two small sales are reported on private terms. No New York quotations can be given. Current German prices are 27 marks per kilo.—equivalent to $2.94 per lb.—for ingots; 26 marks per kilo. for bars; 36 marks per kilo. for powder, and 38 marks for ribbon and wire. For orders of less than 10 kilos., 1 mark per kilo. must be added for ingots or bars, and 2 marks for wire, etc. These prices are at works.

Nickel.—Current quotations are 36@38¼c. per lb., with light sales, but some inquiry for future deliveries.

In London, quotations are 15@15½d. per lb., with a slight downward tendency. In Paris the price is quoted at 4·25@4·50 fr. per kilo.—equivalent to 37@39c. per lb.—for pure metal; 2@.25 fr. per kilo. for copper-nickel alloy, 50% nickel.

Phosphorus.—For commercial phosphorus, quotations continue steady at 50@52½c. per lb., f.o.b., New York or Philadelphia.

Platinum.—Quotations are firm abroad at a point equivalent to $9.50@$10 per ounce. The market is but lightly supplied.

For chemical ware, best hammered metal, Messrs. Eimer & Amend, New York, furnish the following quotations, the prices given being respectively for orders of over 250 grams; for orders of over 100 grams and less than 250 grams, and for orders of less than 100 grams: Crucibles and dishes 41c., 43c. and 45c. per gram. Wire and foil are 40c., 41c. and 42c. per gram. The current retail price for crucibles is 50c. per gram.

Quicksilver.—Quotations are steady at $36 per flask, New York, with no recent change reported. London prices are £6 9s.@£6 10s. per flask.

Sodium.—No sales are reported here, except a few small lots on private terms. In England and Germany makers' prices are equivalent to 90@96c. per lb., according to quantity.

CHEMICALS AND MINERALS.

New York, Friday Evening, March 29, 1895.

Heavy Chemicals.—There is nothing of interest to report of the heavy chemical market. It continues very dull and entirely devoid of any new features. Caustic soda is quiet for future delivery, though prices continue firm, and for spot a fair jobbing trade is doing. The same applies to carbonated soda ash. For alkali the demand is very light and the prices at which consumers will buy do not tempt sellers. Bleaching powder has been in improved request with no change of any consequence in values. A very fair business has been done in caustic soda. We quote this week: Caustic soda, 60%, 2·10@2·20c. for spot; futures 2c. and upward; 70 to 74%, 2·05@2·30c. Carbonated soda ash, 48%, is 1·90c.@1c., according to quantity and delivery; small parcels range higher. Alkali, 48%, is 1·90@1c., with special makes at 1@1·05c. Bicarb. is 1·80@2c. for spot. Bleaching powder is 1·80@1·90c. Sal soda, 65@70c.

Acids.—With the exception of an improved demand from the East, manufacturers report the usual business. The improvement in Connecticut has not been sufficiently great to advance prices, and we quote per 100 lbs. in New York and vicinity, in lots of 50 carboys or more: Acids, acetic, $1.40@$1.65 (in barrels). Muriatic, 18°, 75@85c.; 20°, 90c.@$1.15; nitric, 36°, $3.25@$4; 40°, $4@$4.50; 42°, $4.50@$5.25. Mixed acids according to mixture: oxalic, $7@$7.50. Sulphuric, 60°, 60@70c.; 66°, 70@85c. Blue vitriol is quoted at $3.50@$3.75.

Brimstone.—Quotations for best unmixed seconds are $16.50 for spot and to arrive, near due, and $15.75 @$16 for shipments. Best thirds are $1 less.

Fertilizing Chemicals.—A better tone is noticeable in the fertilizer market, due to the improved demand for both potash salts and ammoniates. Prices, however, are not appreciably higher, though they are rather firmer. We quote this week: Sulphate of ammonia, gas liquor spot, $3.05@$3.10; bone, $3@$3.05. Dried blood, high grade, $1.90@$1.95; low grade, $1.75@$1.80 per unit. Azotine, $2. Concentrated phosphate (30% available phosphoric acid), 75c. per unit. Acid phosphate, 13% to 15%, av. P_2O_5, 57c. per unit at seller's works in bulk. Dissolved bone black, 17% to 18%, P_2O_5, 90c. per unit. Acidulated fish scrap, $12, and dried scrap with few or no sales, nominally $21 f. o. b. fish factory. Tankage, high grade, $19@$19.50; low grade, $18@$18.50. Bone tankage, $21; ground bone, $19@$20. Bone meal, $21@$22.

In lots of 50 tons on contracts we quote, per 100 lbs: Double manure salts, 48-53% (basis of 48%): New York, Boston and Montreal, $1.10; Philadelphia and Norfolk, $1.12½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.15. Sulphate of potash, 90%, and minimum, 98% respectively (basis of 90%): New York, Boston and Montreal, $2.08@$2.09; Philadelphia and Norfolk, $2.10½, Charleston, Savannah, Wilmington, N. C., and New Orleans $2.13.

Muriate of Potash.—Quotations for lots of 50 tons are as follows: 80 85% and minimum 95%, respectively (basis of 80%): New York, Boston and Montreal, $1.78; Philadelphia and Norfolk, $1.80½; Charleston, Savannah, Wilmington, N. C., and New Orleans, $1.83.

Kainit.—Prices for kainit (minimum 23%) are as follows for invoice and actual weights respectively, New York, Boston and Philadelphia, $8.80; Norfolk, $9.15; Charleston, Savannah, Wilmington, N. C., and New Orleans, $9 55.

Nitrate of Soda.—Spot prices continue somewhat weak. We quote $1.57½@$1.62½ on the spot.

NOTES OF THE WEEK.

The exports of alkali from Great Britain to this country during January, 1895, were 319 317 cwts., as against 330,542 cwts. in January, 1894. Of bleaching powder, the exports were 68,319 in January, 1895, compared with 65,102 cwts. for the same month last year.

Liverpool. March 19.

(Special Correspondence of Joseph P. Brunner & Co.)

In some lines of chemicals there is a little more doing, but taking the market all round, the demand is far from satisfactory. Soda Ash is quiet, but quotations are nominally without change, the nearest spot range for tierces being about: Leblanc Ash, 48%, £3 10s.@£3 15s. per ton; 58%, £3 15s.@£4 per ton; net cash. Ammonia Ash, 48%, £3@£3 5s. per ton; 58%, £3 5s.@£3 10s. per ton. Bags are 5s. 5d. per ton less. Soda Crystals neglected, at £2 5s.@£2 7s. 6d. per ton, less 5% for barrels. Caustic Soda is in slightly better request, and we quote spot values about as follows: 60%, £6 10s. per ton; 70%, £7 10s. per ton; 74%, £8 10s. per ton; 76%, £9 10s. per ton, all net cash. Bleaching powder moves but slowly, and for hardwood packages prices range from £7@£7 7s. 6d. per ton, net cash, according to export market.

Chlorate of Potash.—There has been rather more inquiry during the last week and sales reported at from 4¼d. to 4½d. per lb. Bicarb. Soda is selling to a fair extent at £6 15s. per ton, less 2½% for best quality in 1-cwt. kegs, with usual allowance for larger packages. Sulphate of Ammonia is easy at about £11 7s. 6d. to £11 10s. per ton, less 2½%, for good grey, 24@25% in double bags f. o. b. here, according to quality. Buyers are inclined to hold aloof for the moment. Nitrate of Soda is still in small compass on the spot, and quotations range from £9 2s. 6d. to £9 7s. 6d. per ton, less 2½%, for double bags f. o. b. here, according to quality. Near arrivals are quoted at less money, however. Carb. Ammonia—Lump, 3½d. per lb.; powdered, 3¾d. per lb., less 2½%.

MINING STOCKS.

Complete quotations will be found on pages 310 and 311 of mining stocks listed and dealt in at:

New York.	Denver, Colo.	Salt Lake, Utah.
Boston.	Aspen, Colo.	London, England.
Baltimore.	Colorado Springs.	Paris, France.
Philadelphia.	Duluth, Minn.	Mexico.
San Francisco.	Helena, Mont.	Shanghai, China.
Santiago, Chile.	N. Y. Coal Stocks.	N. Y., Industrials.

New York, Friday Evening, March 29, 1895.

The customary dullness prevailed in the mining stock market during the week. The demand, as usual, was very light, but the trading embraced a greater number of stocks than had been dealt in for some weeks past.

The Comstocks continued in small request and show no improvement in prices. Comstock Tunnel stock was the most active, 3,000 shares being sold at 5@6c. Consolidated California & Virginia was very quiet, only 160 shares being sold at $2.85@$2.90. Challar shows a sale of 200 shares at 58c., and Hale & Norcross one of 100 shares at $1.20. Mexican was stationary at 90c., with sales of 200 shares. Of Ophir 250 shares changed hands at $1.65@$1.70. The other sales were 100 shares of Union Consolidated at 55c. and 200 shares of Yellow Jacket at 59c.

Of the California stocks there was a sale of 100 shares of Bodie Consolidated at $1.25. Standard Consolidated was steady at $2.50; sales of this stock amounted to 900 shares this week.

Of the Colorado stocks, Breece, which had not been traded in for many months, this week shows sales of 700 shares at 25c. Iron Silver, another comparative stranger, this week reports a sale of 1,000 shares at 30c.

Of Phœnix, of Arizona, 100 shares were sold at 10c.

Boston. March 28.

(From Our Special Correspondent.)

The volume of business the past week has been light, but there is quite a firm undertone to the market, and prices show a slight advance over last week's quotations. There are parties who confidently predict more activity and higher prices for copper stocks in the near future. The Montana stocks show a good degree of firmness, and Butte & Boston has advanced from $9⅛ to $9⅜ on small transactions, while Boston & Montana has held the advance of last week, and in one sale exceeded 8¼. The sales have been lighter, not so much stock offering, and quotations have ranged from $36¾ to $37⅜, with last sale at $37¼.

Calumet & Hecla improved $5 to $290, with reaction to $287½. Tamarack touched $134⅛, the lowest for the year, with recovery later to $136. Quincy

was in good demand and advanced from $100 to $103, with later sales at $102. The scrip sold at $39¼ @$40, and was in moderate demand. Franklin declined to $11 on sales of about 1,000 shares. Work on the Franklin, Jr., is being pushed, and it is expected that the Calumet vein will be reached in about four months. Osceola advanced to $21 and is steady at about that figure. Kearsarge sold at $8, same as last week, and Atlantic was firm at $10. Wolverine sold this week at $4¼ to $4⅝ assessment paid, with closing sales at $4½. Tamarack, Jr., sold at $12, an advance of $1.

3 P. M.—Calumet & Hecla advanced $2½ to $290. Others unchanged.

Colorado Springs.

BY TELEGRAPH.

Messrs. Gardner & Co. wire us the following quotations for the week ending March 28th:

	22	23	25	26	27	28
Argentine	1.02⅝	1.05	1.00	1.02⅜	1.02	1 02
Gilson	1.13	1.13	1.03⅛	.97	.9 ⅜	.97
Portland	.54	.54⅛	.55	.54	.55	.54
Anaconda	.37	.36	.36	.34	.33	.32
Isabella	.19	.18¾	.17⅛	.16¾	.17⅛	.17⅛
Union	.1 9⅛	.13¾	.13	.12	.12¾	.13¾

Salt Lake City, Utah. March 23.

(Special Report of James A. Pollock.)

The mining share market this week was even more active than that of last. There has been a perceptible rally in the better grade of stocks and a natural stiffening in those that represent the weaker part of the list. Silver is the center around which all stocks are now revolving, and as silver goes so will the price of stocks go. The tendency is now upward.

Ajax offerings continue very free and at lower prices than quotations of last week. Alliance was very strong, advancing a few points, selling at $1, and closing at 90c. bid and $1.15 asked The company reports the full payment of the recent assessment. During a period covering quite a term of years, with 18 assessments levied, not a share of stock has been sold to cover these charges. The showing is a remarkable one and fully demonstrates the faith of the stockholders. American Natural Gas was in some demand and in consequence was pushed up a few cents, closing at 22c. bid and 35c. asked, and selling at 25c. Anchor was in more demand than for some weeks, but the trading was comparatively light; shares closed at $3 bid and $3 40 asked. Bullion-Beck maintained its habitual inactivity. Daly was freely offered, and while not strongly supported held well as to price, closing a trifle higher than last week. Daly West was sought after, with bids of $5.50, but no offerings under $7. Horn Silver was stationary at $1.90 bid and $2.30 asked. We may look for an advance just preceding the day of the dividend, which will be March 31st. Mammoth was fairly active. Late reports from the mine are not very satisfactory. Cane Springs sent in a gold brick valued at $5,000; shares are offered at 90c. Centennial-Eureka was $40 bid, but this bid failed to bring out any stock, as holders are satisfied with an investment paying 30% annually. Comstock was offered at 25c.

Mercur was in strong demand after the declaration of the 12½c. dividend, payable April 10th. The shares moved up a few points upon the dividend notice and the statement of one of the officers of the company that the mine under present conditions could clear $30,000 a month above all expenses and pay 12½c. a share monthly dividends. Ontario was in demand and was freely bid at $9 and $10 50 asked. Silver King was also in favor among the buyers, being $12.50 bid and $14 asked at the close.

San Francisco. March 23.

(From Our Special Correspondent.)

The market this week opened in rather a promising way, but later a general dullness settled down on the Exchange and comparatively little trading was done. This was disappointing, since the promise has been for more activity in trading; the hope now is that it may be only a temporary setback, and that next week may show a renewal of life.

Notwithstanding this dullness and the light sales of the week, prices of the Comstock shares were well maintained, and their fall resulted from the lack of sales. This steadiness is partly due to the better price of silver. Quotations to-day have been as follows: Consolidated California & Virginia, $2 70@$2.75; Ophir, $1.60@$1.65; Confidence, $1.35; Hale & Norcross, $1.05@$1.10; Best & Belcher, 85c.; Mexican, 82c.; Chollar, 49c.@50c.; Gould & Curry, 47c.@49c.; Potosi, 50c.@51c.; Savage, 35c.@36c"; Crown Point, 40c.; Overman, 14c.

There has been more demand for the Bodie stocks and a number of small sales. Bulwer closes at 18c., and Mono at 22c., while Bodie Consolidated has been strong, closing at $1.15@$1.25.

New machinery, it is said, is being put on the National nickel mine, in Churchill County, Nev., and a smelter is to be erected this spring.

The Brunswick Consolidated Mining Company, of Grass Valley, has levied an assessment of 2c. per share.

It is said that a number of miners are preparing to go to the Yukon country in Alaska this spring, and there is a prospect of quite a rush there. If 2,000 men go, as some of the reports put it, there is is likely to be much trouble and distress. One would suppose that the accounts from the Yukon last year were discouraging enough to prevent any rush this spring, but it seems not.

The assessments coming due are being pretty well paid up, it is said, and delinquent sales will be comparatively light.

The investigation at the Carson Mint, of which the telegraph informed you last week, seems to be an interesting matter to some people here. The result is looked for with some curiosity.

BY TELEGRAPH.

San Francisco, Cal., March 29th.—The opening quotations to-day were as follows: Best & Belcher, 82c.; Bodie, $1.30, Bulwer, 18c.; Chollar, 51c.; Consolidated California & Virginia, $2.70; Eureka Consolidated, 33c.; Gould & Curry, 47c.; Hale & Norcross, $1.25; Mexican, 83c.; Mono, 25c.; Ophir, $1.60; Savage, 38c.; Sierra Nevada, 80c.; Union Consolidated, 50c.; Yellow Jacket, 58c.

London. March 16, 1895.

(From Our Special Correspondent.)

As predicted in my last report the boom in South African gold shares has expanded still further during the past week. Business has been conducted on a very large scale. The excitement, both on the Exchange and in the street, has been intense, and prices have gone up all round. Buying orders have come freely from England and France, and no doubt prices would have gone still higher in consequence, only the opportunity for bulls realizing has been so tempting as to be irresistible, and therefore the rises have been temporarily checked several times. Advances have been made all along the line, but in a few cases the advances have been considerable. For instance, Klerksdorp, a comparatively unknown mine, has come into prominence on account of the assiduous buying by the diamond people, who consider that the recent news of the finding of valuable stones on the gold-bearing rock promises well future of the mine. This buying has rushed up the price from a few shillings to over £1 and there is a likelihood of them going much higher. Rand Mines have continued their upward journey and now stand at £29 (nominal value £1). They are being talked up to £40, £50 and even £60, and it would not be surprising to find that they fulfil the prophesy, at least as far as the £40 level is concerned, This company is chiefly a land company and has received fully paid shares in companies which have been formed to buy claims from it. From the sale of quite a small portion of the property owned shares of the nominal value of something like twenty times the nominal capital of the company have been received. As, however, these companies are mostly deep level companies, or other comparatively undeveloped ones, the cash value of their shares is not a very definite quantity. All sorts of extravagant rumors are afloat with regard to an approaching dividend.

A new departure is to be made by the Modderfontein Company by converting the capital so that the shares shall be £4 (100 fr.), and thus to obtain an official quotation in Paris. The capital of the company is at present £200,000 in £1 shares. It is intended to form a new company with £1,000,000 nominal capital in £4 shares. Of these £800,000 will be given to present shareholders, while the remaining shares will be used partly for raising further capital and for forming a reserve.

Among West Australian mines there is nothing of note to record this week, except that the directors of Bayley's Reward will not pay any dividend this quarter. This has caused the price to fall to 8s.

In the North American department, De Lamars have been in demand, and the price has risen to 31s. Montanas have been in request and the market has been fairly strong, owing to the announcement at the half-yearly meeting that £12 000 had been made during this year so far, and that a dividend of 3d. per share would be paid in April. Mr. R. F. Bayliss was present at the meeting and gave some very encouraging forecasts of this year's work. Elkhorns have been very flat on the expectations of a cessation of dividend paying, and the quotation has fallen to 8s.-9s. The Poorman reconstruction still hangs fire; in fact, the authorities seem to have lost all interest in it. Holcomb Valleys are in demand on account of the receipt of a cable message announcing the discovery of a new gravel bed, but details as to its extent are wanting.

A company has been formed called the "Gold and Silver Crown of Nevada Mining Company, Limited" with a capital of £260,000, to take over the claims and mill at present belonging to the Mountain Queen Mining and Milling Company, in the Columbus Mining District, Esmeralda County, Nevada. Companies have also been formed named "The Colorado-Montana Development Syndicate, Limited," and "The Great Western Gold Mining Company, Limited"; but beyond the fact that their objects are to work mines in the United States, the information given is very meagre.

Paris. March 17.

(From Our Special Correspondent.)

Since I wrote you last week the market has been very active in certain directions, and, in consequence, perhaps, has been dull in others. The activity has been most marked for several weeks past in the South African shares, and the buying, chiefly on London quotations, still continues very large. The difficulty of working with London, as we have been doing on most of these stocks, is so great that arrangements have been begun to have them quoted here. One difficulty is that the rules of our Bourse do not permit any quotations of stocks whose par value is less than 100 fr. per share. Now, with the exception of Robinson, Langlaagte and a few others which have shares of 125 fr., most of these companies have put their stock at a par of £1 or 25 fr. To avoid this trouble the Modderfontein Company is going to convert its capital into £4 or 100 fr. shares, and others will doubtless follow the example. Now that so many shares of these companies are held in Paris, it will certainly be much better to have them quoted here, and not to depend upon London entirely for our dealings.

The dullness of which I spoke before has been most apparent in the metallurgical and iron shares, in which very little has been done; we may say, however, that in spite of this dullness their prices have been fairly steady, and in one or two there have even been a little rise. The list of those which are strong includes Creusot and Chatillon-Commentry, which are, however, more dealt in at Lyons than here. The only iron stock to show a gain is Moktael-Hadid. Coal stocks have also been quiet, but quite firm.

The report of the Bank of France to the stockholders shows an increase in the amount of operations, but also a decrease in the net profit, which was for 1894 a total of 21,481,770 fr. against 23,703,360 fr. in 1893; the dividend paid was consequently reduced to 113 fr. per share against 124 fr. in the preceding year. The chief reason for this reduction in profits will be found in the lower rate of interest received. The extent to which the Bank enters into business is shown by the statement that it has besides the central office in Paris, 94 regular branches in other cities, and in addition to this 164 local agencies where business is transacted and discounts are granted. I note, by the way, that the Bank has this week reduced its official rate of discount to 2%- it has stood at 2½% for over a year, which is, I believe, the longest period on record without a change.

I may say that I hear rumors of the transfer of the controlling interest in another American company now owned in London to French hands. I have not yet been able to ascertain definite particulars, but believe there is something in the report.

The official returns give the foreign trade of France for the two months ending February 28th, as follows:

Imports.	1894. Francs.	1895. Francs.	Changes. Francs.
Food	123,377,000	75,826,000	D. 47,181,000
Raw materials	246,164,000	193,739,000	D. 49,425,000
Manufactures	49,139,000	43,050,000	D. 6,089,000
Total	418,610,000	315,615,000	D.102,955,000
Exports.			
Food	45,819,000	39,893,000	D. 5,926,000
Raw materials	61,939,000	71,032,000	I. 9,093,000
Manufactures	132,839,000	133,062,000	I. 223,000
Postal parcels	7,056,000	9,048,000	I. 1,992,000
Total	250,653,000	263 035,000	I. 5,382,000
Excess, imports	167,957,000	59,580,000	D.108,377,000

The chief cause for the large decrease in imports of food is the same as I noted when our January statement was made, and that is that in 1894 several large importations of wheat were made in order to anticipate the increase in duty which took effect in February. The trade return as a whole is haroly a favorable one, and we can only hope that March will show a better result.

AZOTE.

DIVIDENDS.

Delaware, Lackwanna & Western Railroad's quarterly dividend of 1¾%, payable April 20th, at the office of the company. Transfer books close March 30th and reopen 22d.

Horn Silver Mining Company, dividend of 12½ cents per share, $50,000, payable April 1st, at the office of the company, No. 56 Broadway, New York.

Mercur Gold Mining Company, dividend of 12½ cents per share, $25,000, payable April 10th, at the office of the company in Salt Lake City, Utah.

Pennsylvania Salt Manufacturing Company, semi-annual dividend of 6%, payable April 15th.

MEETINGS.

Central Mining Company, of Michigan, annual meeting, at the office, No. 11 William Street, New York, April 1st.

Champion Mining Company, at the office of the company, No. 113 Crocker Building, San Francisco, Cal., April 9th at 2 P. M.

ASSESSMENTS.

COMPANY.	No.	Dinqt.	Sale.	Amt.
Belcher, Nev	50	Apr. 9	Apr. 30	$ .25
Brunswick Con., Cal	8	Apr. 20	May 15	.02
Challenge Con., Nev	18	Mar. 26	April 16	.05
Chemical Gold, Cal	1	Apr. 15	May 4	2.50
Con. New York, Nev	13	Mar. 23	April 17	.30
Crown Point, Nev	65	April 16	May 7	.25
Del Rey, Nev	4	Mar. 1	April 5	.05
Eureka Con., Nev	13	Mar. 26	April 11	.05
Gray Eagle, Cal	29	April 8	April 25	.05
Harney Hydraulic, S. D.	26	April 16	May 11	.05
Julia Con., Nev	....	Mar. 20	April 10	01
Justice, Nev	58	Mar. 14	April 3	2.05
La Candelaria, Mex	8	April 9	April 27	.00
La Grange, Cal	10	April 1	April 22	.35
Occidental Con., Nev	18	Apr. 23	May 15	.10
Osborn Hill, Cal	4	April 4	April 24	.25
Segr. Belcher, Nev.	15	Mar 12	April 1	.001
Starlight, Cal	5	Mar. 18	April 8	.10
Valenzuela, Mex	3	Mar. 20	April 15	.01
Wolverine Copper, Mich	....	Mar. 25	.....	1.00

STOCK QUOTATIONS.

NEW YORK MINING STOCKS.*

NAME OF COMPANY.	Location.	Par val.	Mar. 23. H	Mar. 23. L.	Mar. 24. H.	Mar. 24. L.	Mar. 26. H.	Mar. 26. L.	Mar. 27. H	Mar. 27. L.	Mar. 28. H.	Mar. 28. L.	Mar. 29. H.	Mar. 29. L.	Sales
Alice	Mont.	25													
Belcher	Nev.	100													
Belle Isle	"	100													
Best & Belcher	"	100													
Bodie Cons	Cal.	100							1.25						1 0
Breece	Colo.						.25		.25						700
Bulwer Cons	Cal.	10													
Choltar	Nev.	100	.58												2.0
Comstock scrip	"														
do. T. bonds	"	100											.06	.05	3,000
do T stock	"	100													
Cons Cal. & Va	"	100	2.90				2.80								160
Crown Point		100													
Eureka Cons	Nev.														
Gould & Curry	"	100									1.20				100
Hale & Norcross	Colo.						.30								1,0.0
Iron Silver	"	10													
Lacrosse	"	5?							.14	.12	.12				90
Leadville Cons	"	50					.14	.10	.15		.90				500
Little Chief	Nev.	100	.90												2.0
Mexican	Cal.	100													
Mono	Nev.	100													
Nevada Queen	Utah	100													
Ontario	Nev.	100					1.60				1.70				250
Ophir		100											.10		100
Phoenix of Ariz		100													
Plymouth	Cal.	50													
Potosi	Nev.	100													
Quick S., com	Cal.	100													
do. pref	"	100													
Savage	Nev.	100													
Scorpion	"														
Sierra Nevada	"	100													
Standard Cons	Cal	100	2.50		2.70										90
Union Cons	Nev.	100							.55						100
Victor	Colo.	5													
Yellow Jacket	Nev.	100					.5								200

* Official quotations N. Y. Cons. Stock and Petroleum Exchange. Total shares sold, 8,410.

BOSTON MINING STOCKS.*

NAME OF COMPANY.	Location.	Par val.	Mar. 22. H.	Mar. 22. L.	Mar. 23. H.	Mar. 23. L.	Mar .5. H.	Mar .5. L.	Mar. 26. H.	Mar. 26. L.	Mar. 27. H.	Mar. 27. L.	Mar. 28. H	Mar. 28. L.	Sales
Allouez	Mich.	25													
Atlantic	do.	25							10.50						60
Bonanza		10													
Bost. & Mont.	Mont.	25	37.50	37.00	37.00	36.75			37.75	37.50	37.50		37.25	37.13	1,309
Butte & Bost.	do.	25							9 50		9.88				1'0
Cal. & Hecla	Mich.	25							280	287½	287½				32
Calaipa	Colo.	10													
Centennial	Mich.	25													
Franklin	do.	25							11.50		11.50	11.00	11.00		1,005
Kearsarge	do.	25													
Lake Superior	do	25													
Minnesota Ir.	Minn.	25													
NapaQuicks'ver	Cal	2													
Osceola	Mich.	25							21.00						100
Pontiac	do.	25													
Quincy	do.	25			103	101			103		102				60
do. scrip	do.		40.00	39.50	39.50	39.25			40.00	39.75					3?7
Tamarack	do.	25	136						135	144½	136				7?
Tamarack. Jr.	do.	25									12.00				50
Wolverine	do.	25							4.50	4.25	4.63	4.50	4.5	4.25	900

* Official quotations Boston Stock Exchange. Total shares sold, 4,005.

DENVER MINING STOCKS.* Week ending Mar. 23.

NAME OF COMPANY.	Location.	Par value.	Opening	High est.	Lowest.	Closing. Bid.	Closing. Ask.	Sales.
Amity	Leadville, Colo.		.009½	.01	.009½	.0 9½	.01	
Anaconda	Cripple Creek, "	$5	.35	.37	.36	.36	.37	
Aola	" " "	1	.008	.009	4.08	.008	.009	
Bangkok	Leadville, "	1	.25	.27½	.21½	.27	.27½	
Big Six	"		.08½	09¼	.08½	.09½	.09½	
Boston-Idaho, pref	Caribou Dist., B. C.		22	.23	.22	.22	.27	
Fannie R	Leadville, Colo.	1						
Forepaugh	" "		.40	.60	.40	55	.60	
Gold & Globe	Cripple Creek "	1	.04½	.05½	.05	.05	.05½	
Gold S	" "	1	.02¾	.02½	.02¾	.02¾	.02¾	
Justice	Gilpin County, "	1	.02¾	.03¾	.02¾	.02¾	.02¾	
Mollie Gibson	Aspen, "	5	90	.95	.90½	.91	.92½	
Mt. Rosa	Cripple Creek, "	1	.02¾	.03¼	.02¾	.02¾	.02¾	
Pharmacist	" " "	1	.04¾	.05	.05	.05	.05½	
Work	" " "	1	.02¾	.02¾	.02¾	.02¾	03	

* Official quotations Colorado Mining Stock Exchange. Total shares sold,

COLORADO SPRINGS MINING STOCKS.*

NAME OF COMPANY.†	Par val.	March 18. H.	March 18. L.	March 19. H.	March 19. L.	March 20. H.	March 20. L.	March 21. H.	March 21. L.	March 22. H.	March 22. L	March 23. H.	March 23. L.	Sales.
Alamo	$1					01 9¾								70,000
Anaconda	5					.35						.36		1..45
Argent'm,J	2	1 02½		1 00	.99	1.03	1.00	1.03	1.02½	1.03½	1.02½	1.06	1.02½	28,1 0
Bob Lee	1	.006	.0055			.0055	.0055	.0055		.0055				80,000
CrippleC C	1			.01¾	.01½	.01¾		.01¾	.01⅝					10,500
C. O. D.														
Cr. & C. C.	1									.01½				5,000
Fanny R.	1	.05½				.5½								2,000
Franklin	1													7,000
Gold & Gl.	1			.06½	.06			.05¾		.06¼		.06¼		90,000
Isabella	1	.16¾	.16	.16¾	.16	.16¾	.16¼	.17¾		.19	.17½	.18¾		18,500
Mollie G.	5	.96	.95	.99	.98	1.05		1.14	1 05	1.12½	1.09	1 15	1.12½	7,760
Mt. Rosa	1	.02¾				.01	.02¾							1,000
Pharmacist	1			.01¾										12,050
Portland	1	.58	.56	.56¾		.56	55	.55½	.54¼	.54¾	.53½	.54½		6,5 0
Specimen	1			.0 ¾				.03¾				.03		3,5 0
Summit	1			.08						.08¼				71,340
Union	1	.11¾	.11½	.11¾	.11¾	.12¾	.12¼	.12¾	.12¼	.12¾	.12¼	.12¾	.12¾	16,500
Work	1							02¾	.02¾	.02¾		.02¾		

* Official quotations Colo. Springs Mining Stock Association. Total shares sold, 429,895.
† All the companies are located in Colorado.

ASPEN MINING STOCKS.* March 22.

NAME OF COMPANY.	Location.	Par value.	Bid.	Asked.	Shares sold.	Price.
Alta Argent	Aspen, Colo	$1.00	$0.08	$ 10	40,000	$0.08
Argentum-Juniata	" "	2 00	1.01	1.03	3,960	1.03
Aspen Contact	" "	5.00	.25	.27	200	25
Aspen Deep Mining	" "	1.00	.04	.04½	84,000	.04
Best Friend	" "	1.00	.04½	04½	2,500	.04¼
Bi-metallic	" "	1.00	.02	.02¼		
Bushwhacker	" "	1.00	.06	.06¼		
Caverhill Cons	" "	1.00	.20	.20	5,250	.20
Della S	" "	5.00				
Gold Valley Placer	Routt Co.,	1.00	.05	.06	44,000	.05
Little Annie	Aspen, "	1.00	.02½	.01	42,500	.03
Mineral Farms Cons	" "	1.00	.14	14½	3,700	.14
Mollie Gibson	" "	5.00	1.10	1.12	1,000	1.10
Old Colony Gold	Taylor River, "	1.00		.75	500	.75
Sheep Mt. T. & M	Crystal, "	1.00		.25		
Smuggler	Aspen, "	1.00	1.50	1.60		
West Aspen Mtn	" "	1.00				

* Special report by Arkell, MacMillan & Stewart.

COAL AND COAL RAILROAD STOCKS.

NAME OF COMPANY.	Par value.	Mar. 23. H.	Mar. 23. L.	Mar. 25. H.	Mar. 25. L.	Mar. 26. H.	Mar. 26. L.	Mar. 27. H.	Mar. 27. L.	Mar. 28. H	Mar. 28. L.	Mar. 29. H.	Mar. 29. L.	Sales
Am. Coal	25													
Balt. & Ohio	100	54	53½	55¾	54½	56	55½	56½	55¾			57½	57	3,955
Buff., R. & P.	100													
do. pref	100													
Ches. & Ohio	100	17⅜	17¼	17¾	17⅝	18¼	17¾	18	17½	17¾	17⅝	17⅝	17½	10,110
do. 1st pref	100													
Col. C. & I	100													
Col. Fuel	100			25½										100
do. pref	100													
Col.,H.V.&Tol	100	25¼	24¾	26¾	25¼	27⅜	25¾	26½	25½	26¾	26½	27½	26¾	14,257
do. pfd	100			69	68½			69¾	69½					1,000
Col. & H.Coal	100	7		7⅜	7⅜	7¾	7½	7⅜	7					1,350
do. pfd	100													
Cons. Coal	100													
Del. & Hud.C	100	128¾	127¾	130⅜	129¼	128⅜	127¼	129	128¾	127⅞	126⅜	127¾		7,714
Del., L. & W	50	161½	161⅜	164½	161½	163⅛		163¾	161½			162		5,231
Lake Erie&W	100	17½	17⅜	17¾	17	17⅞		17⅛	16⅞	17		17		4,160
do. pref	100	73		73½		74¾		73¾	73			73¾		75
LehighC.&N.	50			47	46½					46				175
Lehigh Val.	50	32¼	31⅝	32¼		32½	32¼	32½	32¼	32¼	31⅝			1,134
Lehigh&W.B.	50													
Maryl'd C.prf.	100													
Morris & Es'x	101	162												100
N. J. Central	100	97	93¾	98¾	96¾	97	95½	96¾	93¼	94⅛	93⅛	95¾	93¾	91,061
N. Y., L. & W	100													
N. Y., L.E.&W	100	9⅝	8¾	9⅛	9¼	10	9½	9⅝	9⅝	9⅝	9½	9⅝	9¾	6,900
do. pref	100			18										100
N.Y.,Susq.&W	100	12¾	12¼	13	12½	12½	12¾	12¾	12½	13	12¾	13¼	12¾	5,421
do. pref	100	37½	36⅞	38	36¾	36¾	34½	36¼	34⅝	25¾	35¼	35⅝	35¼	14,473
N. & West	50	2⅜		2¾	2⅜	2¾				2¾				920
do. pref	50			13¾				13¾						257
Penn. Coal	50													
Penn. R. R.	50	50⅛	50⅛	51	50⅝	51	50¼	50⅜	50⅜	50⅛	50⅛			2,501
Phil. & Read	50	11¾	10⅝	12¾	11	14	1 ⅜	14⅛	12⅝	13⅜	12⅝	13¼	12¾	18,056
Tenn. C. & I	100	15¾	15⅜	16⅝	15⅝	15¾	15¾	15⅝		15⅝	15¼	15¾	15¼	2,450
do. pref	100													
Wheel. & L. E	100	12¾	12¼	12¾	12⅜	12¾	12	12¾	12	12¾	12	12¾		18,020
do. pref	100	44¾	43¾	44		43¾	43½	43¾	42½	42¾	41¾	43½	42¾	1,500

Total shares sold, 382,080.

INDUSTRIAL AND TRUST STOCKS.*

NAME OF COMPANY.	Par value.	Mar. 23. H.	Mar. 23. L.	Mar. 25 H.	Mar. 25 L.	Mar 26. H.	Mar. 26. L.	Mar. 27. H.	Mar. 27. L.	Mar. 28. H.	Mar. 28. L.	Mar 29. H.	Mar 29. L.	Sales
Adan.s' Exp	100			147½				147½		145				5
Am. Cot Oil.	100	26½	26	27¼	26½	26½	26¼	25¾	25½	25⅝	25½	27¼	25¾	6,2 5
do. pref	100			74	72¾	72¾		74½		72¾	72	74½		80
Am. Expr	100			113		112								39
Am. Sug Rf.	100	99¼	98⅜	101¼	98⅞	101⅛	100¾	100¾	100	100⅜	99⅛	101⅜	100¼	157,67
do. pref	100	94		94		94½		94⅜		94¼	94			1,139
Edis.E.I.Co.	100					92⅝	93	94¼		97	95			1,912
Gen. Electric	100	37	35	37¾	35¾	36⅝	35⅜	36⅜	34¼	36⅛	35	37	35½	86,8 5
Nat. Lead Co	100	33½	33	33⅝	3 ¾	33	32½	32	3 ¼	3 ⅛		32½	32	4,200
do. pref	100	85¾	85¾	85⅛	85⅛	85¼	85	85⅜	85	84¾		85¼	85	1,563
Nat. Lins. Oil.	100	20	19¾							20				110
U.S. Cord. Co.	100	5¾	4¾	5¼	5	5¾	5¾	5¾	5¼	5¼	5	5⅞	5⅜	4,659
do. pref	100	8¾	8	10	8	9¾	8¾	9¼		8½	8	9	8¾	3,2 5
do. gtd.	100			14¾	17	20	18¾			18¾				1,101
U. S. Expr'ss	100			41										15
U.S. Rubber	100	41	40¾	41¾	41	41¾	40¾	40¾	40	41	40¾			3,710
do. pref	100			94		94¾	94			94¼	94			3,082
We'ls, Fa. Ex	100			105¾										25
West. Union	100	83½	88¾	89¾	88¼	89⅜	88⅜	88¾	88¼	88¼	83¼	89	88¼	19,5 6
†Westingh'se														
Air Brake	50													

*Official quotations N. Y. Stock Exchange. † Pittsburg quotations. Total shares sold, 297,299.

MONTANA STOCKS.* HELENA, March 19.

NAME OF COMPANY.	Location	Co.'s office	Par value.	Bid.	Asked.	Shares sold.	Price	Date.
Alice	Silv.Bow Co, Mont.	Butte, Mont.	$25	$0.20	$0.25			
Am. Dev. Co	Mont.	Butte, "	1	8.60	5.00	500	$3.00	Dec. 3
Bald Butte	L.& Cl'keCo., Mont.	Helena "	1	3.50	4.00	300	3 60	Jan 30
Benton Group	Neihart	W.Sph. S.Mont	5	.10	.20			
Bi-Metallic	Granite Co. "	St. Louis, Mo.	25	4.00	5.00			
Combination	" "	Helena, Mont.	10	.75	.85	500	.72½	Jan. 29
D. Eagle (S. H.)	Fergus Co.,	Chicago, Ill.	1					
Elizabeth	Granite Co., Mont.	St. Louis, Mo.	10	.15	.18			
Granite Mt	" " "	" " "	25	1.50	2.00			
Hope	" " "	" " "	10		2 00			
Hope	B.JeffersonCo "	Helena, Mont.	5		5 00			
Hel'a & Frisco	Shoshone Co , Id.	" "	5					
Iron Mountain	Missoula Co., Mont.	" "	10	.50	.60	800	.50	Mar. 12
Ontario	DeerLodgeCo. "	Helena, Mont.	1	1.00	1.25	500	1.00	Jan. 25
Poorm'n (Coeur d'Alene)	Shoshone Co., Id.	Butte "	10	.25	.40			
Royal Gold	D'r LodgeCo., Mont	D'r Lodge, "	5	.75	1.00			

* Special Report by Samuel K. Davis.

San Francisco Stocks.*

NAME OF COMPANY.	Location.	Closing Quotations. Mar. 22	Mar 23	Mar. 25	Mar 26.	Mar. 27	Mar. 28.
Alpha	Nev.						
Alta	"	.24	.24	.23	23	.21	.25
Belcher	"	.40	.40	.38	.39	.40	.41
Belle Isle	"						
B. & Belch	"	.82	.81	.80	80	.82	.82
Bodie	Cal.	1.35	1.15	1.30	1 30	1.30	1.30
Bulwer	"	.21	.15	20	18	18	.25
Challar	Nev.	.46	.47	49	.45	.51	52
Com'w'lth	"						
Con.C.&V.	"	2.70	2.70	2 60	2.60	2.70	2 70
Crown Pt.	"	.40	.38	.38	.38	.39	42
E'r'ka Con	"						
Gold & Cy	"	.47	.4-	.45	.45	.47	.48
Hale & N.	"	1.10	1.10	1.15	1.05	1.15	1.20
Mexican	"	.82	.81	.80	.80	.8	82
Mono	Cal		.26	27	25	.25	.25
Ophir	Nev.	1.70	1.60	1.55	1 50	1 55	1.60
Potosi	"	.50	.50	.50	.49	.52	.52
Savage	"	.38	.40	.36	34	36	37
Sierra Nev	"	.76	.77	.78	.78	.77	.80
Utal'n Con	"	.50	.50	.61	.5	.50	.51
Utah	"	.05	.06	.07	.07	.07	.06
Yel. Jack.	"	.50	.53	.53	.5	.53	.57

* Par value of all shares quoted is $100.

Baltimore Stocks.* Mar. 28.

Name of Company.	Par value.	Bid.	Ask.
Blt.&N.C.,N.C.	5		$0 02
B'lt.M.& S..N C			.02
Conr. Hill, N.C.	5		.02
Cons. Coal, Md	100	30.00	35.00
Con G.& C., N.C.	5		.04
Ga. C.Coal, Md	100	103.00	105.00
How.C.2 C.,Md	5	1.10	1.20
Lake Chr., Md	5		.10
Ore Knob, Md	10		.:0
Silver Valley			20.00

*Official quotations Baltimore Exch'ge.

Duluth Stocks.* Mar. 25.

Name of Company.	Par value	Price	Bid.	Asked
Adams Iron Co.	10		$3.0	$3.50
Biwabik M.I.Co.	100	18.00	18.50	20.00
Chandler Ir.Co.	25			27 00
Clev.Cliffs I.Co.	100		25.00	32.00
Gr't No. M.Co	100		1.75	2.00
Gr't West.M.Co.	100		1.00	1.50
Jackson Ir. Co.	25			60.00
L. Sup.C. Ir. M.	100	12.50	13.00	13.50
L. Sup.(Marq'te)	25		17.00	20.00
Mes. C., L.& E.Co	10		5.00	4.00
Mes. Chief I.Co.	100		2.50	2.50 3.00
Mes. Mt. Ir. Co.	100		16.50	16.00 17 00
Met. L. & I. Co.	25			60.00
Minnes'ta Ir.Co.	100		40.00	45.00 55.00
Mountain Ir.Co.	100		42.00	45.00 50.00
Ohio Mining Co.	100		4 00	4.00 5.00
Pioneer Ir. Co.	25			.25 1.00
Pitts. & L.A.Co	100		55.00	62.00
Sec'ty L.& E.Co.	10			16.00 18 00

Pittsburg Stocks.* Mar. 28.

Name of Company.	Par value	Last sale.	Bid.	Ask.
GAS STOCKS:				
Allegheny	$100	$48	$47	$50
Chartiers Val.	100		7½	9⅝
Ohio Valley	50			40
People's Nat. Gas	50		34	36
People's Nat. Gas and Pipeage	25		13½	14⅛
Pennsylvania	50		7½	8¼
Phila. Co.	50	15⅞	15¾	16
Wheeling	50		30¾	32½
COAL STOCKS:				
N.Y. & Cl. G. C.	50			55
MINING STOCKS:				
Lustre	10	12	12	13
OIL CO. STOCKS:				
Tuna Oil Co			10	
Washington	50			50

Official quotations Pittsburg Exch'ge.

MEXICO. Week Ending March 23.

NAME OF COMPANY.	State.	No. of shares.	Last dividend.	Last assessment.	Prices. Opening.	Prices. Closing.
Angustias	Guanajuato	2,400	$15.00		$1,080	$1,080
Asturiana y Anexas.	Zacatecas.	2,500	10.00		510	510
Cerro Colorado.	Chihuahua.	15,000			30	30
Concepcion y Anexas	S. Luis Potosi.	2,700			225	220
El Oro	Guanajuato.	500	$0.02		120	120
do. pref	"	2,000	2.00		120	120
Huautla Sta. Ana	Morelos	4,000	1.50	0.50	100	100
Luz de Borda	Michoacan	3,000			50	50
do. Free stock.	"	1,000			35	35
Luz de Maravillas	Hidalgo	1,100			400	400
Purisima de los Com.	Zacatecas.	2,400			50	50
Real del Monte	Hidalgo.	2,554	30.00		1,270	1,270
Rosario y Anexas	Durango	4,800			130	135
do. pref	"	2,400			80	80
San Rafael del Oro	Guanajuato	3,000			305	300
Sta. Gertr. y Anexas.	Hidalgo	28 800	1.50		80	81
do. free stock.	"	9,600	1 03		20	20
Sta Maria de la Paz.	S. Luis Potosi.	2,400			260	260
Tlauzingo	Puebla	2,400			32	40
Zomelahuacan (gold)	Vera Cruz	5,000		1.50	100	100
Zona Min. de Pozos.	Guanajuato	2,400		1.50	185	175

NOTE.—In most Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being named. Prices are in Mexican dollars.

LONDON. March 16.

NAME OF COMPANY.	Par value.	Quotations. Buyer.	Quotations. Seller.	NAME OF COMPANY.	Par value.	Quotations. Buyer.	Quotations. Seller.
AMERICANS:		£ s. d.	£ s. d.	COPPER STOCKS:		£ s. d.	£ s. d.
Alaska-Mexican	£1	17 6	1 0 0	Rio Tinto	£10	12 17 6	13 0 0
Alaska Treadwell	5	2 17 6	3 2 6	Tharsis	2	4 7 6	4 12 6
American Belle	1	0	1 3	AUSTRALIANS:			
De Lamar	1	1 11 0	1 12 0	Bayley's Reward	1	8 0	9 0
Elkhorn	1	8 6	9 0	Broken Hill Propriet'ry	8s.	1 17 0	1 18 0
Harquahala	1	5 0	5 6	Mt. Morgan Gold	17s. 6d.	2 12 6	2 15 0
Holcomb Valley	5s.	2 6	2 9	INDIANS:			
Jay Hawk	£1	1 6	2 0	Champion Reef	£1	4 0 0	4 2 6
Montana	1	11 0	11 6	Mysore	1	2 11 3	2 13 9
New Guston	1	10 0	12 6	Nundydroog	1	1 17 6	1 18 9
Palmarejo (Mex.)	1	9	1 3	Goregum		2 17 6	3 0 0
Plumas-Eureka	2	12 6	15 0	" preferred		3 10 0	3 12 6
Poorman	5s.	1 3	1 6	SOUTH AFRICANS:			
Richmond	£5	8 9	11 3	British S. Africa Co		2 7 6	2 8 0
Sierra Buttes	2	10 0	12 6	City & Suburban	1	20 7 6	20 12 6
Springdale	4s.	2 6	2 9	Crown Reef	1	10 7 6	10 12 6
SOUTH AMERICANS:				De BeersCon (diam'nd)	5	21 3 9	21 6 3
Colombian Hydraulic	£1	10 0	12 6	Durban-Roodepoort	1	8 0 0	8 2 6
Frontino & Bolivia	1	1 5 0	1 7 6	Ferreira	1	18 0 0	18 2 6
Tolima, A shares	5	6 15 0	7 5 0	Geldenhuis Estate		6 6 3	6 8 9
" B "	5	6 0 0	6 10 0	Jagersfontein (diam'd)		21 12 6	21 17 6
COPPER STOCKS:				Langlaagte Estate		4 18 9	5 1 3
Cape Copper	2	1 6 3	1 8 9	New Primrose		6 11 3	6 13 9
" " preferred	2	1 18 9	2 1 3	Robinson		8 17 6	9 0 0
Copiapo	2	1 8 9	1 11 3	Simmer & Jack	1	13 17 6	14 2 6

Salt Lake City Stocks.* March 23.

Name of Company.	Par val.	Bid.	Asked.	Actual selling price.
Ajax			$0.65	
Alliance	$1	.90	1.10	$1.00
Am. Nat. G's		.22	.35	.25
Anchor	20	3.00	3.40	3.30
Appex			.10	
Bogan	1	.50	.65	.60
Bull-Beck	10	8.00	9.00	9 00
Cane Spr'gs		.50	.75	.75
Cent. E'reka	50	40.00	44.00	42.50
Cleve. Con.	1		.50	.50
Comstock	25	.15	.25	.20
Crescent	25		.02½	
Dalton	5	.01½	.02½	.02
Daly	20	6.50	7.50	6.75
Daly West	20	5.50	7.00	6.50
Elko	2½		.25	.25
Eureka Hill			125 00	
Horn Silver	25	1.90	2.30	2.15
Little Pittsburg			.25	.25
Lucky Bill.	10		.49	
Mammoth.	25	1.10	1.25	1.15
Mecars	25	50	.85	.85
Mercur	25	3.40	4.00	3 62½
New Tintic			3.00	
Niagara			2.50	
No. Eureka			.10	.10
North. Spy.	1		2.50	
Ontario	100	9.00	10.50	10.00
Silver King	20	12 00	14.00	13.50
Silver Spar.	5		1.00	1.00
Tetro.	1		.25	.25
Utah	1	.50	1.00	.75

PARIS. Week ending March 16.

NAME OF COMPANY.	Country.	Product.	Capital Stock.	Par value.	Divs. last year.	Prices. Op'ning.	Prices. Closing.
			Francs.	Fr.	Fr	Fr.	Fr.
Acieries de Creusot	France	Steel mfrs.	27,000,000	2,000	100.00	1,890.00	1,897.50
" " Firminy	"	"	3,000,000	500	85.00	1,570.00	1,555.00
" " Fives-Lille	"	"	12,000,000	500	35.00	630.00	680.00
" " la Marine	"	"	30,000,000	500	30.00	785.00	780.00
Aguas Tenidas	Spain.	Iron pyrites	10,000,000	500	40.00	455.00	451.00
Boleo	Lower Cal.	Copper		500		740.00	720.00
Bruay	France	Coal	3,0 0,000	400	600.00	13,860.00	13,790.00
Callao	Venezuela.	Gold	32,200,000	125		13.50	14.00
Cape Copper	S. Africa	Copper		50	1.50	37.50	38.00
Champ d'Or	"	Gold		25		104.25	104.50
Courrieres	France	Coal	6 0,000	300	150.00	4,250.00	4,248.50
De Beers Consolidated	S. Africa	Diamonds	98,750,000	125	15.63	535.00	550.00
Dombrowa	Russia	Coal		500		520.00	520.00
Dourges	France	"		1,000	225.00	6,950.00	6,960.00
Dynamite Centrale	"	Explosives		500	25.00	625.00	629.00
Dynamite Francaise	"	"		500	25.00	720.00	715.00
Huanchaca	Bolivia	Silver		125	5.00	160.00	160.00
Jerez-Lanteira	Spain	Copper				5.75	6.00
Kebao	Tonquin	Coal		500		610.00	601.00
Laurium	Greece	Zinc & lead	16,360,000	500	40.00	545.00	548.00
Maindano	Italy	Zinc	12,500,000	500	52.50	995.00	1,000.00
Metaux, Cie. Fran. de	France	Metal d'lers.	25,000,000	500	87.50	240.00	232.50
Mokta-el-Hadid	Algeria.	Iron	18,212,500	500	40.00	775.00	785.00
Nickel	N. Caledonia	Nickel	12,720,000	500	30.00	255.00	268.00
Penarroya	Spain.	Coal, etc.		500	52.50	778.00	768.50
Pontgibaud	France	Lead, etc.				270.00	250.00
Rio Tinto	Spain	Copper	81,250,000	250	17.50	320.00	321.00
Robinson	S. Africa	Gold		125	12.50	222.50	255.00
Saint Elie	Fr. Guiana.	"	4,000,000	25		36.00	27.50
Soufres Roumaines	Italy	Sulphur				190.00	185.00
Tharsis	Spain.	Copper		50	6.25	110.50	112.50
Vielle Montagne	Belgium	Zinc	9,000,000	80	30.00	466.25	468.50

Special Report by James A. Pollock.

Santiago, Chile.* Jan. 21.

COMPANY.	Par val.	Prices. Bid.	Prices. Ask.	Last sale.
Arturo Prat		$42½	$43¼	$42
D. de Huantajaya		45	46	45
Huanchaca		120	121	121
Oruro, stock		3,130	3,140	3,130
do bonds, 10%		95	100	100
Nitrate Co's:				
Antofogasta		245	246	245
Internacional		29	30	31
Union		84	85	84

*Prices are Chilean pesos, or dollars.

Shanghai, China. Feb. 22.

Name of Co.	Par.	Last div.	Price.
Jelebu Mg Co.	$5	$0.25	Tls. 3·47
Punj. Mg. Co.	4		" 4·75
do. pref.	1		" 1·28
Raub A'lianG.	£1	10½d.	" 3·03
Sheridan Con.	Tls. 100		" 1·00

Philadelphia Stocks.* March 27.

Name of Company.	Par value	Bid.	Ask.
Bethlehem Iron Co.			80
Blooming. C. & C. Co.	$50		
Cambria Iron Co.	50		$47
Hutchinson Coal Co.			
do. Pref.		25¼	25¾
North. Liberties Gas.	25	$32½	
Penn. Gas Coal Co.	50		35
Penn. Nat. Gas.			49½
Penn. Salt Co.	50	96	97
Westmoreland Coal	50	50	50¼

*Official quotations Phila. Exchange.

CURRENT PRICES.

These quotations are for wholesale lots in New York unless otherwise specified.

Acid—Acetic, chem. pure .18@.20
Commercial, in bbls. and cbys. .01¾@.02
Carbonic, liquefied, ℔ lb. .07@.10
Chromic .20
Hydrofluoric .04@.07
Alcohol—95%, ℔ gall. $2.30@$2.40
Absolute $3.80
Alum—Lump, ℔ cwt. $1.80@$1.80
Ground, ℔ cwt. $1.70@$1.90
Lump ℔ ton, Liverpool £1 10s.@£4 17s.
Aluminum Chloride—Pure, ℔ lb. $1.25
Amalgamating solution, ℔ lb. .60
Sulphate, ℔ cwt. $1.25@$1.75
Ammonia—Sal., lump, ℔ lb. .09@.10
Carbonate, ℔ lb., English and German. .08¼@.09¼
Muriate, white, in bbls., ℔ lb. .07@.08
Aqua Ammonia—(in cbys) 18° ℔ lb. .03@.04
20°, ℔ lb. .04@.05
26°, ℔ lb. .04¾@.05
Antimony—Oxymur, ℔ lb. .04@.06
Regulus, ℔ lb. .07@.08
Oxide .18@.25
Argois—Red, powdered, ℔ lb. .15
Arsenic—White, powdered ℔ lb. .03@.03¼
Red ℔ lb. .05½@.06
Yellow .08@.09
White at Plymouth, ℔ ton $12 2 6
Asbestos—Canadian, ℔ ton $15@$120
Italian, ℔ ton, c. i. f. L'pool $18@$60
Ashes—Pot, 1st sorts, ℔ lb. .04¾@.04¾
Pearl .05½@.06
Asphaltum—
Prime Cuban, ℔ lb. .04@.05
Hard Cuban, ℔ ton $28.00@$30.00
Trinidad, refined, ℔ ton $30.00@$35.00
Egyptian and Syrian, ℔ lb. .05@.07¼
Californian, at mine, ℔ ton $12.00@$26.00
at San Francisco, ℔ ton, $15.00@$29.00
Barium—Carbonate, pure precip., ℔ lb .10
Carbonate, commercial, ℔ lb. .03
Chlorate, crystal, ℔ lb. .25@ 30
Chloride, commercial, ℔ lb. .02@.02½
Iodide, ℔ oz. .40
Nitrate, ℔ lb. .06¼@.07
Sulph., Am. prime white, ℔ ton $15@$18
Sulph., foreign, floated, ℔ ton $16@$18
Sulph., off color, ℔ ton $10@$11.50
Carb., lump, f. o. b. L'pool, ℔ ton £6
Bauxite—℔ ton $7 @ $8
Bichromate of Potash—Scoton. ℔ lb. .09@.10
American, ℔ lb. .09@.09½
Bichromate of Soda—℔ lb. .08@.09
Borax—Refined, ℔ lb., in car lots .06@.06½
Bromine—℔ lb. .25@ 35
Cadmium Minion—℔ lb. $2.00
Cadmium Iodide—℔ lb. $5.00
Chalk—℔ ton $1.50@$2.25
Precipitated, ℔ lb. .04@.05
China Clay—English, ℔ ton $12@$17.00
Domestic, ℔ ton $9@$11
Chlorine, liquefied, ℔ lb. .25
Chrome Yellow—℔ lb. .10@.25
Chrome Iron Ore—℔ ton, San Francisco $10.00
Chromalum—Commercial, ℔ lb. .03@.05
Cobalt—Oxide, ℔ lb. $1.40@$1.55
Copper—Sulph. English Wks. ton £20@£21
Vitriol (blue), ℔ lb. .03¾@.04¼
Nitrate, ℔ lb. .25
Copperas—Common, ℔ 100 lbs .50@.65
Best, ℔ 100 lbs. $1.25@$1.50
Liverpool, ℔ ton, in c'sks. £1 11s.@£1 15s.
Corundum—Powdered, ℔ lb. .04½@.09
Flour, ℔ lb. 03
Cryolite—Pow., ℔ lb., bbl. lots .06½@.07½
Emery—Grain, ℔ lb. (℔ kg.) .04½@.05
Flour, ℔ lb. .02½@.04
Epsom Salt—℔ lb. .01@.01½
Feldspar—Ground, ℔ ton. $6.00@$10.00
Fluorspar—Powdrd, No. 1, ℔ ton. $15@$20
Lump, at mine 26@28
French Chalk—℔ ton $2.25@$2.30
Fuller's Earth—Lump, ℔ ton. $10@$20
Glauber's Salt—in bbls., ℔ cwt. .50@.75
Glass—Ground, ℔ lb .09@.10
Gold—Chloride, pure, crystals, ℔ oz. $12.00
pure, 15 gr., c. v., ℔ doz. $5.40
liquid, 15 gr., g. s. v., ℔ doz. $5.50
Chloride and sodium, ℔ oz. $6.00
15 gr., c. v., ℔ doz. $2.75
Oxide, ℔ oz. $27.25
Gypsum—Calcined, ℔ bbl. $1.75
Iodine—Resublimed, ℔ lb. $3.50@$3.60
Iridium—Oxide ℔ lb. $90
Iron—Nitrate, 40°, ℔ lb .01@.01¼
47°, ℔ lb .02@.02¼
Kaolin—*See China Clay.*
Kieserite—℔ ton $9@$10
Lead—Red, American, ℔ lb .04½@.05
White, American, in oil, ℔ lb. .05½@.06¼
White, English, ℔ lb., in oil .06½@.07½
Acetate, or sugar of, white .06@.08
Nitrate .05¾@.06½
Lime Acetate—Am. Brown .90@.95
" Gray $1.50@$1.60
Litharge—Powdered, ℔ lb. .04½@.05½
English flake, ℔ lb. .07½@.09¾
Magnesite—Crude, ℔ ton of 1,015 kilos $7@$10
Calcined, ℔ ton of 2,240 lbs. $12@$14
Brick, ℔ ton of 2,240 lbs. $47.50
Manganese—Ore, per unit .23@.28
Oxide, ground, ℔ lb. .02½@.06¾
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. .55@.60
Marble Dust—℔ bbl. 85c.@$1
Metallic Paint—Brown ℔ ton. $20@$25
Red $20@$25
Mica—In sheets according to size.
1st quality, ℔ lb. $3.25@$6
Mineral Wool—Ordinary slag .01½
Ordinary rock .02¼
Nitre Cake—℔ ton $2.50@$3
Ochre—Rochelle, ℔ lb. .01@.01½
Washed Nat Oxf'rd, Lump, ℔ lb. .01¼@.01½
Washed Nat Oxf'rd, Pow., ℔ lb. .01¾@.01¼
Golden, ℔ lb. .03@.05
Domestic, ℔ ton. $8@$10
Oils, Mineral—
Cylinder, light filtered, ℔ gal. .12@.20
Dark filtered, ℔ gal. .10@.15
Extra cold test, ℔ gal. .20@.24
Dark steam refined, ℔ gal. .07½@.12
Phosphorus—℔ lb. .50@.55
Precip., red, ℔ lb. 75@.80
white, ℔ lb. 80@.85
Platinic Chloride—Dry, ℔ oz. $6
Plumbago—Ceylon, ℔ lb. .04@.05
American or German, ℔ lb. .02@.02½
Potassium—Cyanide, ℔ lb., C. P. 67%, ℔ lb. .40
mining .20@.22
Bromide, domestic, ℔ lb. .28@.32
Chlorate, English, ℔ lb. .10@.12
Chlorate, powdered, English, ℔ lb. .12@.14
Carbonate, ℔ lb., by casks, 98-99% .06@.07
Caustic, ℔ lb., pure slick .04½@.06
Iodide, ℔ lb. $2.58@$2.80
Nitrate, refined, ℔ lb .05@.06
Bichromate, ℔ lb. .09@.11
Yellow Prussiate, ℔ lb., 24c. contr., 25c. single casks. Red Prussiate, ℔ lb. .39@.45
Pumice Stone—Select lumps, ℔ lb .03½@.15
Original cks., ℔ lb. .01½@.02
Powdered, pure, ℔ lb. .01½@.02
Pyrites—Non-cupreous, p. unit. 10@.11
Quartz—Ground, ℔ ton $6.00@$10.00
Rotten Stone, Powdered, ℔ lb. .03½@.03¼
Lump, ℔ lb. .06@.07
Original cks, ℔ lb. .04½@.05½
Rubbing stone, ℔ lb. .03½@.04
Salt—Liverpool, ground, ℔ sack .70
Domestic, fine, ℔ ton $7@$7.50
Common, fine, ℔ ton $4.50@$5
Turk's Island, ℔ bush .26@.28
Salt Cake—℔ ton $9@$15
Saltpeter—Crude, ℔ lb. .04@.05
Soapstone—Ground, ℔ ton $6@$5
Block and slab according to size.
Sodium—Prussiate, ℔ lb. .22@.24
Phosphate, ℔ lb. .04@.05
Stannate, ℔ lb. .06@.12
Tungstate, ℔ lb. .30@.35
Hyposulphite, ℔ cwt., in casks $1.70@$1.90
Strontium—Nitrate, ℔ lb. .08@.09
Sulphur—Roll, ℔ lb. .01¼@.01¾
Flour, ℔ lb. .01¼@.01¾
Sylvinit, 27@35%, per unit .36½@.37½
Talc—Ground French, ℔ lb .01¼@.01½
American No. 1, ℔ lb. .01@.01½
American No. 2 .006@.008
Terra Alba—French, ℔ cwt .50@.80
English .70@.80
Domestic, ℔ ton $8.50@$10
Tin—Crystals, in kegs or bbls. .14@.15
feathered or flossed. .20
Muriate, sirgle .07@.12
Double or strong, 54° B. .10@.15
Oxymur, or nitro .10
Vermilion—Imp. English, ℔ lb. .64@.66
Am. quicksilver, bulk .59@.62
Am. quicksilver, bags .60@.64
Chinese .85@$1.00
Trieste .90@.95
American .11¼@.12
Zinc White—Am., Dry, ℔ lb. .03¼@.04½
Antwerp, Red Seal, ℔ lb. .05½@.05¾
Paris, Red Seal, ℔ lb. .06¾@.07
Muriate solution .06
Sulphate crystals in bbls., ℔ lb. .03@.03¼

THE RARER METALS.

The prices given below are the prices in Germany, and are per gramme except where otherwise stated:

Arsenic (metallic), per kilo $0.25
Barium (ex amalgam) 2.12
" (per electrol.) 7.75
Bismuth (metallic), per kilo 6.25
Cadmium (metallic) " 2.75
Calcium (per electrol.) 5.25
Cerium (pulv.) 2.25
" (fusum in globulis) 5.50
Chromium (fus.) .40
" (cryst.) .75
Cobalt (metallic), per kilo 10.00
" (pure), per kilo 40.00
Didymium (pulv.) 5.50
Erbium-Yttrium (oxydat.) 10.00
Gallium (cryst.) 100.00
Germanium (fus.) 37.50
(pulv.) 35.00
Glucinum (pulv.) 7.00
" (cryst) 10.75
Indium 5.00
Iridium (fusum) 1.25
Lanthanum (pulv.) 6.00
" (per electrol.) 11.00
Lithium (in glob.) 5.00
" (wire) 6.25
Manganese fusum) .25
Molybdenum (pulv.) .12½
Niobium (pulv.) 4.25
Osmium 1.00
Palladium (wire) .06
" (pulv.) 1.00
Potassium (metal), per kilo 27.50
Rhodium 1.63
Ruthenium 2.50
Rubidium 6.25
Selenium (cryst.) .50
" (precipitates) .62½
Strontium (per electrol.) 7.25
" (ex amalgam) 3.25
Tantalum 4.75
Tellurium (fusum) .50
" (precipitates) .22½
Thallium .03¾
Titanium 1.13
Tungsten (pure) .0
Uranium 1.0
Vanadium 4.0

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total Levied	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date & amount of last.		
1	Adams, s. L.	Colo.	$1,500,000	150,000	$10	*	.....	.....	.....	$687,500	Jan.	1892	.05
2	Alaska-Treadwell, g.	Al'ska	5,000,000	200,000	25	.....	.....	.....	.....	2,200,000	Jan	1895	.37½
3	Alice, s.	Mont.	10,000,000	400,000	25	*	.....	.....	.....	975,000	Nov.	1891	.06¼
4	Amador, s.	Cal.	1,250,000	250,000	5	*	.....	.....	.....	31,250	Aug.	1890	.12½
5	American, g.	Colo.	3,000,000	300,000	10	*	.....	.....	.....	225,000	Mar.	1892	.05
6	American Belle, s. g. c	Colo.	2,000,000	400,000	5	*	.....	.....	.....	50,000	April	1891	.12½
7	Americ'n & Nettie, g. s	Colo.	.....	300,000	.....	.....	.....	.....	.....	175,000	Mar.	1892	.05
8	Atlantic, C	Mich.	1,000,000	40,000	25	280,000	April	1875	$1.00	700,000	Feb.	1891	1.00
9	Argyle, g.	Colo.	1,000,000	1,000,000	1	*	.....	.....	.....	20,000	Mar.	1892	.01
10	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*	.....	.....	.....	900,000	July.	1894	.10
11	Aurora, I.	Mich.	2,500,000	100,000	25	.....	.....	.....	.....	650,000	Feb.	1893	2.00
12	Badger, s	Ont.	250,000	50,000	5	.....	.....	.....	.....	37,500	Mar.	1890	.25
13	Bald Butte	Mont.	250,000	250,000	1	*	.....	.....	.....	382,000	Jan.	1895	.05
14	Bangkk-C. Bell, s. L	Colo.	600,000	600,000	1	.....	.....	.....	.....	71,510	Mar	1895	.02
15	Bates Hunter, s. g.	Colo.	1,000,000	1,000,000	1	.....	.....	.....	.....	67,500	Dec.	1891	.00¾
16	Belden, F. E., m.	N. H.	500,000	100,000	5	*	.....	.....	.....	135,113	Mar.	1895	.01
17	Belle Isle, s.	Nev.	10,000,000	100,000	100	230,271	Sept	1893	.10	300,000	Dec.	1879	.25
18	Belcher, s. g.	Nev.	10,400,000	104,000	100	3,262,900	Nov.	1893	.20	15,397,200	April	1876	1.00
19	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec.	1889	.25	200,000	Jan.	1890	.10
20	Best Friend	Colo.	1,000,000	1,000,000	1	*	.....	.....	.....	90,000	Feb.	1892	.01
21	Bi-Metallic, s. g.	Mont.	5,000,000	200,000	25	.....	.....	.....	.....	1,630,000	June	1893	.10
22	Bodie Con., g. L.	Cal.	10,000,000	100,000	100	714,990	July	1893	.15	1,677,572	Dec.	1894	.23
23	Boston & Mont., g.	Mont.	2,500,000	250,000	10	*	.....	.....	.....	720,000	June	1886	.15
24	Boston & Mont., c. s.	Mont.	3,750,000	150,000	25	*	.....	.....	.....	2,325,000	Nov.	1894	1.00
25	Brotherton, I.	Mich.	2,000,000	80,000	25	*	.....	.....	.....	120,000	Mar.	1893	.50
26	Bulwer, g.	Cal.	10,000,000	100,000	10	155,000	July	1893	.15	190,000	Oct.	1892	.05½
27	Bunker Hill & S. s. L.	Idaho	3,000,000	300,000	10	*	.....	.....	.....	150,000	Oct.	1888	.06
28	Caledonia, g.	Dak.	1,000,000	100,000	100	805,000	May.	1885	.15	192,000	Oct.	1890	.06¼
29	Calumet & Hecla c.,	Mich.	2,500,000	100,000	25	1,300,000	.....	.....	.....	41,300,000	Dec.	1894	7.00
30	Centen'l-Eureka, s. L.	Utah.	1,500,000	30,000	50	30,000	Mar.	1888	1.00	1,020,000	Feb	1895	1.00
31	Central, c.	Mich.	500,000	20,000	25	100,000	Oct.	1861	.65	1,970,000	Feb.	1891	1.00
32	Champion, g.	Cali.	340,000	34,000	10	150,000	.....	.....	.....	198,600	Feb.	1895	.10
33	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	1,850,000	Dec.	1894	.25
34	Cœur D'Alene, s. L.	Idaho	5,000,000	500,000	10	.....	.....	.....	.....	340,000	June	1893	.06
35	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	*	.....	.....	.....	502,661	April	1893	.05
36	Commonwealth, s.	Nev.	10,000,000	100,000	100	260,000	Nov.	1893	.10	90,000	Nov.	189	.20
37	Confidence, s. L.	Nev.	2,496,000	24,960	100	1,589,550	Aug.	1892	.50	277,680	April	1889	1.00
38	‡Cons. Cal. & Va., s. g	Nev.	21,600,000	216,000	100	216,000	Dec.	1892	.50	3,898,800	Feb.	1895	.25
39	Contention, s.	Ariz.	12,500,000	250,000	50	.....	.....	.....	.....	2,637,500	Aug.	1892	.20
40	Cook's Peak, s.	N. M.	2,000,000	200,000	10	.....	.....	.....	.....	119,532	Nov.	1892	.05
41	‖Cop. Queen Con., C.	Ariz.	2,000,000	200,000	10	.....	.....	.....	.....	1,810,000	Feb.	1895	.25
42	Coptis	Nev.	10,000,000	100,000	100	.....	.....	.....	.....	48,000	Feb.	1895	.01
43	Cortez, s.	Nev.	1,500,000	300,000	5	*	.....	.....	.....	735,000	Feb.	1893	.15
44	Crescent, s. L. g.	Utah.	15,000,000	600,000	25	60,000	Oct	992	.10	238,000	Oct.	1888	.05
45	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,750,000	June	1893	.25	¶1,898,000	Jan.	1875	.00
46	Daly, s. L.	Utah.	3,000,000	150,000	20	.....	.....	.....	.....	2,850,000	May.	1893	.25
47	‡Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*	.....	.....	.....	1,140,000	Sept.	1892	.05
48	De Lamar, g. s.	Idaho	2,000,000	400,000	5	.....	.....	.....	.....	1,372,000	Jan.	1895	.25
49	Derbec B. Grav., g.	Cal.	10,000,000	100,000	100	100,000	Sept.	1892	.10	260,000	Mar.	1891	.05
50	Dexter, g. s.	Nev.	1,000,000	100,000	10	.....	.....	.....	.....	245,000	July	1893	.25
51	Elkhorn, s.	Mont.	1,000,000	200,000	5	*	.....	.....	.....	1,299,689	Dec	1894	.18
52	Elkton	Colo.	500,000	500,000	1	*	.....	.....	.....	60,000	D c.	1894	.01
53	Enterprise, s.	Colo.	2,500,000	500,000	5	*	.....	.....	.....	850,000	June.	1893	.25
54	Eureka Con., s. L. g.	Nev.	1,000,000	50,000	20	550,000	June	1889	.50	5,112,500	Jan.	1892	.25
55	Evening Star, s. L.	Colo.	500,000	50,000	10	*	.....	.....	.....	1,437,500	Dec.	1889	.25
56	Father de Smet, g.	Dak.	10,000,000	100,000	100	900,000	Nov.	1878	1.00	1,125,000	Dec.	1885	.20
57	Franklin, C.	Mich.	1,000,000	40,000	25	320,000	June	1867	2.50	1,240,000	Jan.	1894	2.00
58	Glengarry	Mont.	1,000,000	100,000	10	.....	.....	.....	.....	10,000	June.	1891	10
59	Gold & Globe, G.	Colo.	750,000	750,000	1	.....	.....	.....	.....	9,375	Mar.	1895	.00¾
60	Gould & Curry, s. g.	Nev.	10,800,000	108,000	100	4,688,400	Oct	1893	.10	3,826,800	Oct.	1870	10.00
61	Grand Prize, s.	Nev.	10,000,000	100,000	100	785,000	Jan.	1890	.30	495,000	Mar.	1884	.25
62	Granite Mountain, s.	Mont.	10,000,000	400,000	25	.....	.....	.....	.....	12,120,000	July.	1892	.20
63	Great Western, L. Q.	Cal.	5,000,000	50,000	100	50,526	.....	1889	.15	388,866	Nov.	1893	.25
64	Hale & Norcross, g. s.	Nev.	11,200,000	112,000	100	5,646,800	June	1893	.50	1,822,000	Aug.	1888	.50
65	Hecla Con., s. g. L. c.	Mont.	1,500,000	30,000	50	*	.....	.....	.....	2,055,000	Mar.	1895	.50
66	Hel'a Mg. & Red. s. L. g.	Mont.	3,315,000	663,000	5	*	.....	.....	.....	197,970	July.	1886	.06
67	Helena & Frisco, s. L.	Idaho	2,500,000	500,000	5	.....	.....	.....	.....	240,000	Feb.	892	.02
68	Helena & Victor	Mont.	1,000,000	200,000	5	.....	.....	.....	.....	80,000	May.	1892	.05
69	¶Holmes, s.	Nev.	10,000,000	100,000	100	345,000	Mar.	1890	.25	75,000	Apr.	1892	.25
70	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July.	1878	1.00	5,527,000	Mar.	1895	.25
71	Hope, s.	Mont.	1,000,000	100,000	10	*	.....	.....	.....	603,250	Jan.	1895	.10
72	Horn-Silver, s. L.	Utah.	10,000,000	400,000	25	*	.....	.....	.....	5,035,500	Dec	1894	.12½
73	Idaho, g.	Cal.	310,000	3,100	100	.....	.....	.....	.....	5,489,000	Sept.	1893	2.50
74	Illinois, s.	N. M.	100,000	100,000	1	*	.....	.....	.....	45,000	April	1889	.20
75	Iron Mountain, s.	Mont.	5,000,000	500,000	10	*	.....	.....	.....	305,000	Jan.	1895	.02
76	Iron-Silver, s. L.	Colo.	10,000,000	500,000	20	*	.....	.....	.....	2,800,000	April	1889	.20
77	Jackson, g. s.	Nev.	5,000,000	50,000	100	247,500	Mar.	1893	.20	8,000	Feb.	1895	.04
78	Kearsarge, c.	Mich.	1,000,000	40,000	25	190,000	Oct.	1887	1.00	80,000	Jan	1891	2.00
79	Kennedy	Cal.	10,000,000	100,000	100	.....	.....	.....	.....	1,505,000	Feb.	1895	.48
80	Leadville Con., s. L.	Colo.	4,000,000	400,000	10	*	.....	.....	.....	516,000	Fe.	1893	.03
81	Lexington, g. s.	Mont.	4,000,000	40,000	100	*	.....	.....	.....	652,200	July.	1893	.90
82	Little Chief, s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	820,000	Dec.	1890	.05
83	Maid of Erin	Colo.	3,000,000	600,000	5	.....	.....	.....	.....	708,800	April	1893	.25
84	Mammoth, s. L. c.	Utah	10,000,000	400,000	250	110,000	.....	1882	.25	1,040,000	Dec.	1891	.10
85	Maxfield	Utah.	3,000,000	300,000	10	.....	.....	.....	.....	117,000	April	1893	.03
86	Mayflower, D. gravel	Cal.	1,200,000	60,000	20	.....	.....	.....	.....	214,000	Feb.	1895	.10
87	Minas Prietas, g. s.	Mex.	1,000,000	100,000	10	.....	.....	.....	.....	350,000	Dec.	1890	.50
88	Minnesota, C.	Mich.	1,000,000	40,000	25	420,000	April	1886	1.00	1,820,000	Mar.	1876	...
89	Minnesota Iron, I.	Minn.	16,500,000	165,000	100	.....	.....	.....	.....	2,745,000	April.	1893	1 50
90	Mollie Gibson, s.	Colo.	5,000,000	1,000,000	5	19 500	Jan.	1891	.01	4,080,000	Jan.	1895	.05
91	Monitor, g.	S. Dak	2,500,000	250,000	10	.....	.....	.....	.....	45,000	Oct.	1890	.03
92	Mono, g.	Cal.	5,000,000	50,000	100	797,500	Feb.	1893	.25	12,500	Mar	1886	.25
93	Montana, Lt., g. s.	Mont.	3,300,000	660,000	5	*	.....	.....	.....	2,701. 75	Jan.	1895	12½
94	Moose	Colo.	600,000	600,000	1	.....	.....	.....	.....	72,000	Nov.	1894	.12
95	Morning Star, s. L.	Colo.	1,000,000	100,000	10	.....	.....	.....	.....	1,025,000	Dec.	1891	.25
96	Morning Star Drift, g	Cal.	240,000	2,400	100	*	.....	.....	.....	328,200	Mar.	189	7.00
97	Moulton, s. g.	Mont.	2,000,000	400,000	5	*	.....	.....	.....	63,000	Feb.	1894	.15
98	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	June	1880	2.00	225,000	Nov	1893	30
99	Napa, Q.	Cal.	1,00 ,000	1,000,000	1	.....	.....	.....	.....	10,000	Jan.	1895	10
100	Mt. Rosa, G	Colo.	700,000	700,000	7	.....	.....	.....	.....	68,000	April.	1893	.20
101	Navajo, g. s.	Nev.	10,000,000	100,000	100	538,714	Sept.	1893	.10	226,111	April	1889	.10
102	New Guston, s.	Colo.	550,000	110,000	5	.....	.....	.....	.....	1,977,500	April	1892	.75
103	North Banner Con.	Cal.	1,000,000	100,000	10	.....	.....	.....	.....	20,000	July.	1891	.05
104	North Commonpow'th	Nev.	10,000,000	100,000	10	90,000	Jan.	1893	.10	25,000	June.	1891	.25
105	N. Hoover Hill, g. s.	N. C	300,000	120,000	2½	*	.....	.....	.....	30,000	Dec.	1885	.06¼
106	North Belle Isle, s.	Nev.	10,000,000	100,000	100	513,075	April	1893	.10	230,000	May	1888	.50
107	North Star, G.	Cal.	1,000,000	100,000	10	20,000	.....	1885	.02	450,000	June	1893	50
108	Nugget, G.	...	1,000,000	1,000,000	1	*	.....	.....	.....	10,000	Jan.	1895	.00¾
109	Omaha Cons., G.	Cal.	2,400,000	24,000	100	.....	.....	.....	.....	97,200	July.	1894	.15
110	Ontario, s. L.	Utah	15,000,000	150,000	100	.....	.....	.....	.....	13,175,000	Oct.	1892	.50
111	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,391,040	July	1893	.25	1,585,800	Jan	1895	1.00
112	Osceola, c.	Mich.	1,250,000	50,000	25	480,000	April	1876	1.60	1,597,500	Jan.	1895	1.00
113	Pacific Coast, B.	Cal.	2,000,000	20,000	100	.....	.....	.....	.....	422,500	July	1893	1.00
114	Parrot, C.	Mont.	2,000,000	200,000	10	.....	.....	.....	.....	1,569,000	June	1891	.10
115	Petro	Utah.	10,000,000	400,025	100	.....	.....	.....	.....	17,500	July.	1893	.75
116	Pharmacist, G.	Cal.	1,406,250	140,625	50	.....	.....	.....	.....	2,696,295	Oct.	1893	.18
117	Piumas Kureka, G.	Colo.	1,200,000	1,200,000	1	.....	.....	.....	.....	80,000	June.	1893	01
118	Plymouth Con., G.	Cal.	5,000,000	400,000	50	*	.....	.....	.....	2,280,000	Feb.	1888	.40
119	Poorman, G. s.	Idaho	375,000	300,000	125	*	.....	.....	.....	68,260	Sept.	1892	.15
120	Portland, G.	Colo.	3,000,000	3,000,000	1	*	.....	.....	.....	112,750	Mar.	1895	.01
121	Quicksilver, pref., Q.	Cal.	4,300,000	43,000	100	.....	.....	.....	.....	1,823,911	June	1891	1.25
122	" com., Q	Cal.	5,700,000	57,000	100	.....	.....	.....	.....	443,867	July.	1889	.40
123	Quincy, c.	Mich.	1,250,000	50,000	25	200,000	Dec.	1862	.....	7,470,000	Feb.	1895	4.00
124	Red Cloud	Idaho	1,000,000	200,000	5	.....	.....	.....	.....	153,000	Dec	1892	.10
125	Retriever, L.	S. Dak	1,250,000	250,000	5	.....	.....	.....	.....	20,000	Aug.	1892	.03
126	Rialto, G.	Colo.	300,000	300,000	1	*	.....	.....	.....	50,250	April	1892	.01½
127	Richmond, s. L.	Nev.	1,350,000	54,000	25	*	.....	.....	.....	4,886,780	Sept	1893	.25
128	Rico-Aspen	Colo.	5,000,000	1,000,000	5	.....	.....	.....	.....	325,000	Nov.	1894	.02½
129	Ridge, C.	Mich.	1,250,000	50,000	25	219,939	Mar.	1886	50	99,785	Feb.	1880	.50
130	Robinson Con., s. L.	Colo.	10,000,000	200,000	50	*	.....	.....	.....	885,000	Mar	1886	.05
131	Savage, s.	Nev.	11,200,000	112,000	100	6,966,000	June	1893	.25	4,460,000	June	1869	3.00
132	Sierra Buttes, G.	Cal.	2,225,000	122,500	10	.....	.....	.....	.....	1,559,933	Oct.	1893	.12½
133	Sierra Nevada, s. G.	Nev.	10,000,000	100,000	100	6,521,910	Aug.	1893	.20	902,000	Jan.	1871	1.00
134	Silver Cord, s. L. G.	Colo.	5,000,000	500,000	10	.....	.....	.....	.....	270,000	April	1889	.10
135	Silver King, s.	Ariz.	10,000,000	100,000	100	97,479	Aug.	1892	.25	1,950,000	July	1887	.25
136	Silver Mg. of L. V., s. L.	N. M.	500,000	500,000	1	.....	.....	.....	.....	300,000	Dec.	1891	4.05
137	Small Hopes Con., s.	Colo.	5,000,000	250,000	20	*	.....	.....	.....	3,225,000	Oct.	1893	.10
138	Standard, G. s.	Cal.	10,000,000	100,000	100	100,000	June	1890	.50	3,161,159	Mar.	1795	.10
139	Swansea, g. s.	Colo.	600,000	60,000	10	.....	.....	.....	.....	39,000	Sept.	1892	.10
140	Tarbarack, C.	Mich.	1,250,000	50,000	25	520,000	April	1888	3.00	4,070,000	Dec.	1894	4.00
141	Trinity Riv'r Hydr., G	Colo.	500,000	500,000	1	*	.....	.....	.....	37,500	Apr.	1894	.00½
142	Union	Colo.	1,250,000	1,250,000	1	.....	.....	.....	.....	26,520	Dec.	1894	.00½
143	United Verde, C.	Ariz.	3,000,000	300,000	10	*	.....	.....	.....	562,500	Dec	1883	25
144	Victor, G.	Colo.	1,000,000	200,000	5	.....	.....	.....	.....	265,000	Feb.	1895	.05
145	Ward Con., s.	Colo.	2,000,000	200,000	10	.....	.....	.....	.....	20,000	Dec.	1890	.05
146	W. Y. O. D.	Cal.	60,000	30,000	2	22,500	May.	1891	.10	96,000	Jan	1895	20
147	Yankee Girl, s	Colo.	1,300,000	260,000	5	.....	.....	.....	.....	520,000	July.	1891	.25
148	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	55[illegible]00	July.	1893	.25	2,184,000	Aug.	1871	1.50

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied.	Assessments. Date and amount of last		
1	Alliance, s. g.	Utah	$100,000	100,000	$1	$120,000	Feb.	1891	.10
2	Allouez, c.	Mich.	2,000,000	80,000	25	1,424,937	Oct.	1891	.10
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	209,000	Sept.	1892	.10
4	Alta, s.	Nev.	10,080,000	100,800	100	3,369,880	Jan.	1892	.05
5	American Flag, s.	Colo.	1,250,000	125,000	1	300,000	June	1887	.....
6	Anchor, s. L. g.	Utah.	3,000,000	150,000	5	560,000	July.	1893	.5
7	Barcelona, g.	Nev.	5,000,000	200,000	5	*	.....	.....	.....
8	Belmont, G.	Cal.	500,000	500,000	100	*	.....	.....	.....
9	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	April	1884	.10
10	Best & Belcher, s. g.	Nev.	10,080,000	100,800	10	2,405,275	Aug.	1892	.25
11	Black Oak, g.	Cal.	3,000,000	300,000	100	*	.....	.....	.....
12	Brownlow, g.	Colo.	250,000	250,000	5	.....	.....	.....	.....
13	Brunswick, G.	Cal.	2,000,000	400,000	5	.....	.....	.....	.....
14	Bullion, s. g.	Nev.	10,000,000	100,000	100	2,890,000	Aug.	1892	.25
15	Butte & Boston, C. s.	Mont.	5,000,000	200,000	10	.....	.....	.....	.....
16	Butte Queen, G.	Cal.	1,000,000	100,000	1	6,000	Jan.	1892	.....
17	Calaveras, g.	Cal.	500,000	500,000	5	.....	.....	.....	.....
18	Calaveras Con., g.	Cal.	800,000	160,000	10	.....	.....	.....	.....
19	California, g.	Cal.	1,000,000	100,000	5	9,000	Mar.	1892	.....
20	California Con. I. Q.	Cal.	2,250,000	450,000	10	.....	.....	.....	.....
21	Challenge Con., g. s.	Nev.	5,000,000	50,000	10	.....	.....	.....	.....
22	Chollar, s. g.	Nev.	11,200,000	112,000	2	1,820,000	May.	1892	.5
23	Colchis, s. g.	N. M.	500,000	150,000	5	.....	.....	.....	.....
24	Colorado, s.	Colo.	1,625,000	325,000	1	.....	.....	.....	.....
25	Comstock, s.	Utah.	1,250,000	250,000	100	.....	.....	.....	.....
26	Comstock Tun.	Nev.	10,000,000	100,000	100	35,000	Mar	1887	.10
27	Con. Imperial, g. s	Nev.	5,000,000	50,000	50	2,062,500	Jan.	1892	.25
28	Con. New York, s. g.	Nev.	5,000,000	100,000	100	110,000	Mar.	1892	.10
29	Con. Pacific, g.	Cal.	6,000,000	60,000	100	198,000	June	1890	.10
30	Crescent, s. L.	Colo.	3,000,000	300,000	100	*	.....	.....	.....
31	Crocker, s.	Ariz.	10,000,000	100,000	1	165,000	Aug.	1892	.05
32	Crowell. G	N. C.	500,000	500,000	1	.....	.....	.....	.....
33	Dahlonega, g	Ga.	250,000	250,000	10	*	.....	.....	.....
34	Decatur, s	Colo.	1,500,000	300,000	.....	.....	.....	.....	.....
35	Denver City s.	Colo.	5,000,000	500,000	11	*	.....	.....	.....
36	Denver Gold, g.	Colo.	300,000	60,000	5	.....	.....	.....	.....
37	Dickens-Custer, s.	Idaho	2,100,000	420,000	5	.....	.....	.....	.....
38	Durango, G.	Colo.	500,000	500,000	1	*	.....	.....	.....
39	El Dorado, g.	Cal.	1,000,000	250,000	4	*	.....	.....	.....
40	Emma, s.	Utah.	625,000	500,000	125	.....	.....	.....	.....
41	Emmons, s. L.	Colo.	2,000,000	2,000,000	1	.....	.....	.....	.....
42	Empire, s.	Utah.	10,000,000	100,000	100	.....	.....	.....	.....
43	Eureka Tunnel, s. L.	Nev.	10,000,000	100,000	100	*	.....	.....	.....
44	Exchequer, s. G.	Nev.	10,000,000	100,000	100	940,000	Jan.	1892	.25
45	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	130,500	Jan.	1892	.50
46	Gogebic I. Syn., I.	Wis.	8,000,000	200,000	25	.....	.....	.....	.....
47	Gold Cup, s.	Colo.	500,000	500,000	1	*	.....	.....	.....
48	Golden Era, s.	Mont.	1,000,000	200,000	10	*	.....	.....	.....
49	Gold Flat, G.	Cal	1,000,000	100,000	10	5,000	Mar.	1892	.05
50	Gold Rock, G.	Cal.	1,000,000	500,000	2	.....	.....	.....	.....
51	Golden FeatherCa., g	Cal.	900,000	180,000	5	.....	.....	.....	.....
52	Goodyear G. s. L.	Mont.	1,000,000	200,000	5	13,000	Feb.	1892	.01
53	Grand Duke, s.	Colo.	800,000	800,000	1	.....	.....	.....	.....
54	Gregory Con., g.	Mont.	3,000,000	300,000	10	*	.....	.....	.....
55	Harlem M. & M. Co., g.	Cal.	1,000,000	200,000	5	.....	.....	.....	.....
56	Hartery Con., g.	Cal.	1,000,000	100,000	10	22,000	Oct.	1890	.05
57	Hartshorn, g. s. l.	S. Dak	1,250,000	250,000	5	8 750	Sept.	1891	.00¾
58	Head Cent. & Tr., s. g	Ariz.	10,000,000	100,000	100	16,981	Mar.	1892	.03
59	Hector, G.	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
60	Himalaya, g. s.	Utah.	1,800,000	80,000	10	12,800	Oct.	1892	.00¾
61	Holywood	Cal.	200,000	100,000	2	.....	.....	.....	.....
62	Huron, C.	Mich.	1,000,000	40,000	25	280,000	May.	1887	3.00
63	Idaho, g. s.	Idaho	1,250,000	250,000	5	.....	.....	.....	.....
64	Ingalls, g	Colo.	100,000	20,000	5	.....	.....	.....	.....
65	Ironton, I.	Wis.	1,000,000	40,000	25	.....	.....	.....	.....
66	Iroquois, C.	Mich.	1,250,000	50,000	25	.....	.....	.....	.....
67	Kentuck Con.	Nev.	10,500,000	105,000	00	57,750	July	1892	.14
68	Julia Con., g. s.	Nev.	11,000,000	110,000	100	1,463,000	Jan.	1889	.10
69	Justice, g. s. c.	Colo.	500,000	500,000	1	*	.....	.....	.....
70	Lacrosse, g.	Colo.	1,000,000	100,000	10	*	.....	.....	.....
71	Little Josephine, s.	Colo.	250,000	50,000	5	.....	.....	.....	.....
72	Lone Star Cons., g.	Cal.	500,000	500,000	1	10,000	April	1892	.40¼
73	Madeleine, G. s. L.	Colo.	750,000	50,000	1	4,500	Feb.	1892	.00¾
74	Mammoth Gold, g.	Ariz.	2,500,000	500,000	5	*	.....	.....	.....
75	Mayflower Gravel, G.	Cal.	1,000,000	100,000	10	*	.....	.....	.....
76	Mexican, G. s.	Nev.	10,000,000	100,000	100	2,917,560	ct.	1892	.50
77	Michigan, g s	Mich.	2,500,000	100,000	25	40,000	Mar.	1892	.....
78	Mike & Starr, s. c.	Colo.	1,000,000	200,000	5	.....	.....	.....	.....
79	Milwaukee, s.	Mont.	500,000	500,000	1	*	.....	.....	.....
80	Modoc Chief, I. s. g.	Idaho	1,000,000	200,000